

Vol. 60

No. 4

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APRIL

1940

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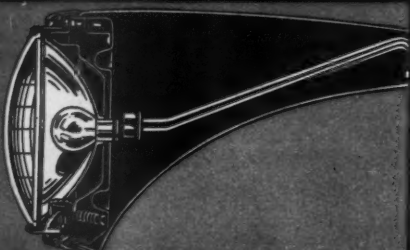
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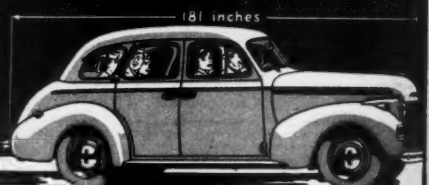
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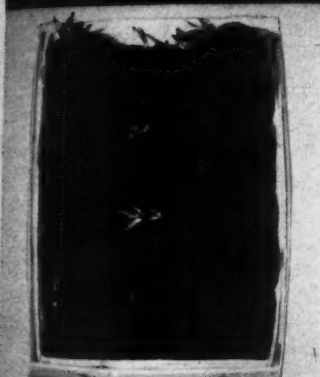
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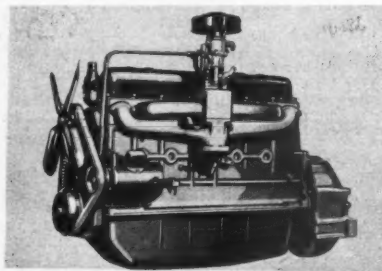


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SPRAYS AND THE ORCHARD SOIL

IN heavily sprayed orchards it has been found that the soil may become so loaded with spray materials as to prevent satisfactory cover crop growth. Prof. O. M. Morris in an experiment on re-establishing and maintaining cover crops in apple orchards in the State of Washington found that soil collected from fields that had never been in orchard or in other sprayed crops, when treated with arsenate of lead at the rate of one, two, three, four and five tons per acre and planted to alfalfa, the yield was reduced. Even with one ton the alfalfa yields were cut in half, as compared with the controls. Greater amounts of arsenate of lead reduced growth to a minimum. On the other hand, calcium arsenate or fluorine, even up to five tons per acre, had no detrimental effect on alfalfa growth. Phenothiazine applications were highly injurious.

A study of the effects of applying arsenious acid, lead acetate and lead nitrate to soils indicated that arsenic, rather than lead, is the active injurious factor in lead arsenate injury to cover crops. Alfalfa plants watered with leachings from pots of soil collected in a heavily sprayed orchard made little growth, but recovered when treated with manure water.

A number of materials, such as wheat straw, barnyard manure, superphosphate, iron sulphate, zinc sulphate, sulphur, lime and muck, were tested as correctives for spray residues. In most cases there was no benefit, but zinc sulphate used singly or in combination with iron sulphate gave promising results. Manure, alfalfa meal, ammonium sulphate (alone or with wheat straw) and superphosphate proved helpful. A second planting of alfalfa grew better than the first.

Mulching Raspberries

Mulching is a means of conserving soil and soil moisture. Plants respond well under mulch treatment. Recently Dr. G. M. Darrow and Dr. J. R. Magness reported the results of mulching raspberries in an experiment carried on at Beltsville, Md. There the growing season is long and relatively hot and humid and

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APRIL

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AMERICAN FRUIT GROWER

The
NATIONAL FRUIT MAGAZINE

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WHERE SUCCESSFUL SELLING BEGINS

THE month of April will see fruit trees in bloom, blossom festivals and their queens, the hum of bees and sprayers, the smell of freshly turned soil, the beginning of a new season. It also will be a month of planning—plans for the production of crops and for their disposal. This means taking advantage of past experience in setting up a brand new program.

We would not want to stir the dead ashes of the past, but someone has said that "he who ignores history will repeat the mistakes of the past." It is simply this old question of production versus marketing. For years many growers have said, "We know how to produce fruit, what we want to know is how to sell it." With this point of view we have every sympathy and AMERICAN FRUIT GROWER has focused special attention upon this all important problem of marketing. Yet we cannot escape the fundamental truth that the first step in successful marketing is the production of fruit of good quality. This means that marketing *begins* in April.

We have just been perusing a copy of "The Horticulturist" for March, 1849. The editor, presumably A. J. Downing, the outstanding horticulturist of his day, treats of this problem which evidently was an old one at that time. His observations of 91 years ago are still true and worth repeating. "It may always be laid down as a safe proposition, that the market will never be overstocked with really fine fruit. Three-fourths of all the farmers, who grow fruit for market, send it to market in such indifferent order that it brings half price. When peaches are so abundant as to be worth only 50 cents a basket, fine samples of Crawford's Late, or Old Mixons, bring two dollars a bushel. What is the inference? Plainly, that if it is worth while to grow fruit for market, it is best worth while to grow only the best, and to grow it in the superior manner." True, part of this picture does not fit our modern commercial situation, but the point he is driving at certainly does.

He advised that the first secret of success was to plant only the best sorts. The second was to plant them upon the right soil, well prepared. The third was to supply them with the proper food. How modern this sounds, except that he says nothing about spraying.

So with the opening of this new season we would stress the strong axis between production methods and the ultimate marketing. Every recurring year bears witness to the same story and thus we feel an urge to quote the familiar words, "None is so blind as he who will not see."

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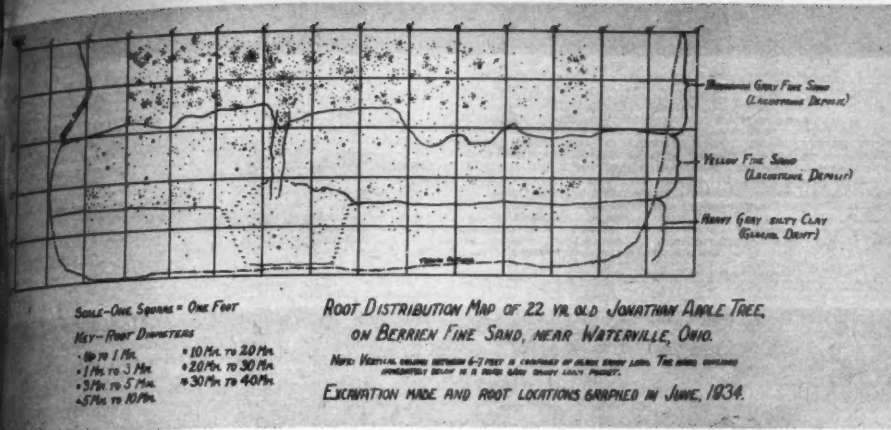
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THE GOOD EARTH OF THE ORCHARD



Method of study of root distribution in soils of different texture. A trench is dug on a radius of the tree roots and the face of the wall is laid off in foot squares. Roots of different size are mapped and recorded on a chart, as shown above.

ONE MUST KNOW AND UNDERSTAND THE SOIL IF ONE IS TO HAVE A PROFITABLE PARTNERSHIP WITH NATURE

By L. D. BAVER

Ohio State University

WHY is the nature of the soil such an important factor in the vigor, production and length of life of orchard trees? Before this question can be answered it is necessary to understand the soil requirements that are essential for the optimum growth of any plant. An apple tree, for example, is not essentially different from other agricultural plants with respect to the basic soil requirements that determine its ability to grow and produce a crop. The tree may require that certain soil factors be more favorable than are necessary for the growth of corn, for instance; however, fundamentally, the same soil requirements are involved with both plants.

Temperature, nutrients, moisture and air are four factors regulating the growth of plants that are closely dependent upon the properties of the soil. How does the soil affect these factors so as to determine the performance of the plant? A brief discussion of the make-up of the soil should help to clarify this point. Visualize a given volume of soil, such as one cubic foot. This volume of soil is made up of solid soil particles and the pore space between the particles. The total pore space of most soils will vary between 35 per cent and 60 per cent by volume. The more compact the soil, the lower will be the total porosity. The total porosity, however, may not be the important factor that determines the properties of a soil. For example, a clay soil may have a greater total pore space than a

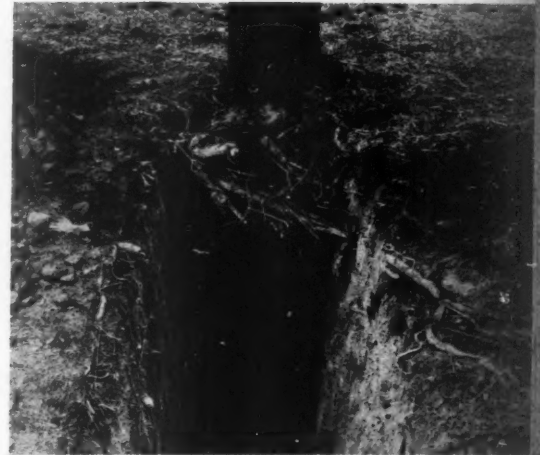
pure sand. The size of the pores is usually the determining factor for variations in soil properties.

Everyone is familiar with the fact that small pores will hold water tightly because of capillary forces and that large pores will not hold water. For example, sands are recognized as having low water-holding capacities; clays hold large amounts of water. Sands have too much aeration; clays usually are poorly aerated. Thus, the large pores within the soil are the pores through which water percolates and in which the soil air is found. Good drainage and adequate aeration are dependent upon a sufficient number of these large pores, sometimes called the "non-capillary" pores. The water-holding capacity depends upon the number of small or "capillary" pores.

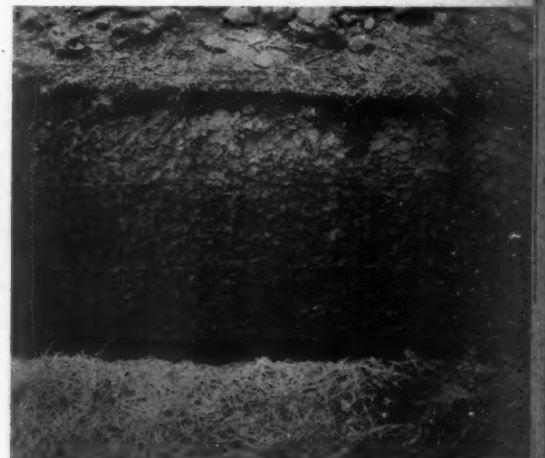
The relative distribution of these pores varies with the texture and the structure of the soil. Sands have a high content of non-capillary and a small amount of capillary pores. Such soils are droughty. Clays have an excess of capillary over the non-capillary pores; these soils, unless they are well granulated, are poorly drained and aerated. Silt loams, on the other hand, tend to approach the more ideal situation, since the total pore space is about equally divided between capillary and non-capillary pores. Such soils are usually well-drained (unless the permanent water table is too close to the surface), ade-

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AMERICAN FRUIT GROWER

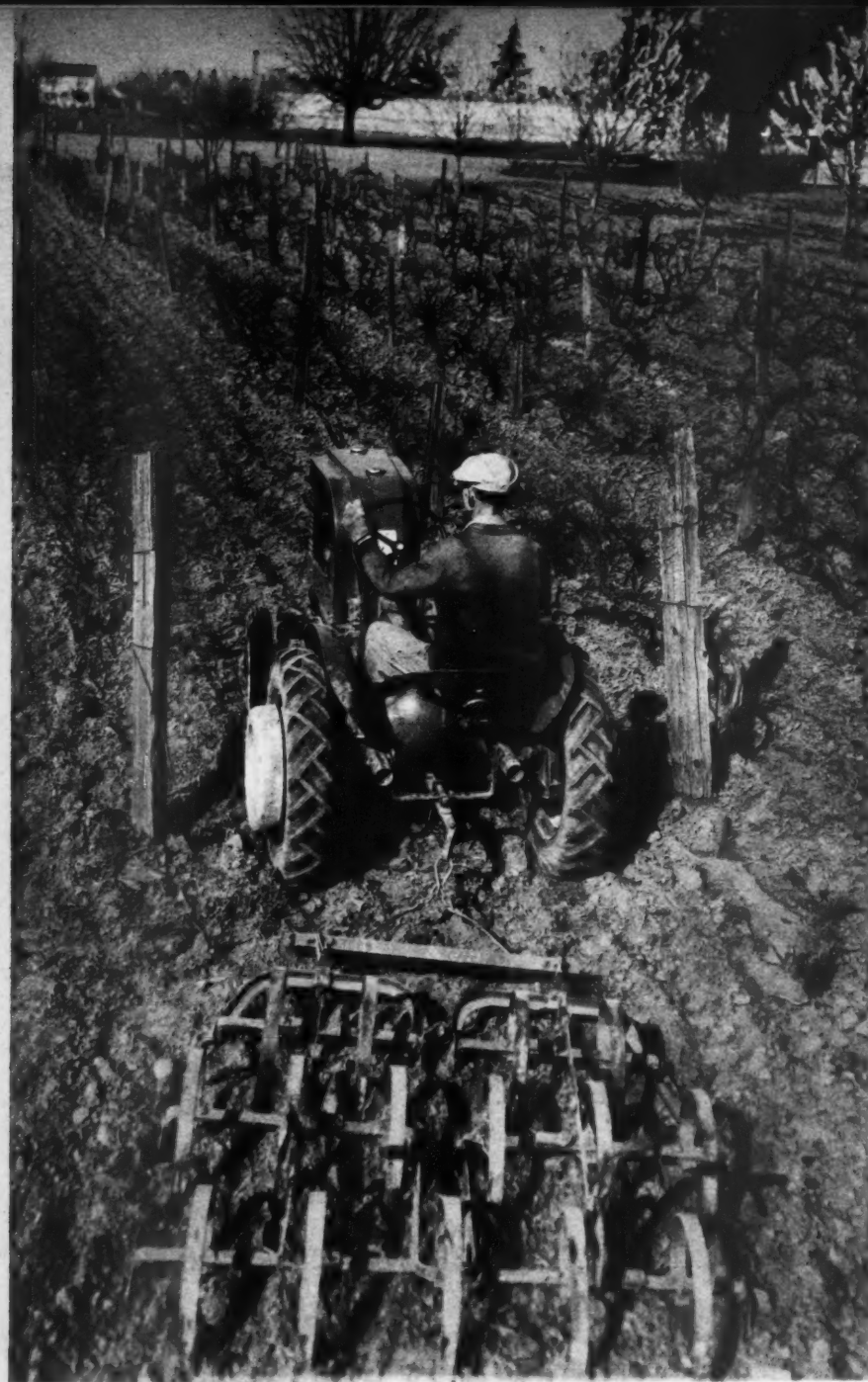


Method of mapping roots of a tree (above and below). A trench is excavated on a radius from the trunk as deep as roots are formed. Cord is stretched at foot intervals in each direction.



An upturned filler tree which is being used for root studies. The soil structure, aeration and height of water table determine to a large degree the depth of rooting.





When vineyards such as this one at Salem, Ore., are located on flat land, soil erosion isn't a problem and cultivation can be done frequently. But on rolling or hilly land such practices have resulted in ruinous top soil losses. Terracing and use of cover crops are recommended ways to cut down erosion.

GRAPES •

EROSION TROUBLE

Through the Finger Lakes district of central New York, vineyards dot the hillsides that slope down to Lake Keuka and other bodies of water in this picturesque section. Located there because of the natural sites, vineyards have flourished, and growers claim their crops have a finish that ranks with any other section's grapes.

Into this picture of bountiful grape harvests of high quality fruit there has come in the last 25 years the ominous scourge of soil erosion. For while the sloping land provides both soil and air drainage, the surface angle, light soil and continuous cul-

tivation unite to form a perfect situation for washing away of valuable top soil.

As a climax to a quarter of a century of this soil loss, two severe rainstorms last summer, that sent torrents of water cutting deeply into the soil, carrying unreturnable land down to the lakes, resulted in losses of from \$100 to \$800 for many a vineyard owner. This loss was only for labor and materials used to fill in gullies so fruit could be harvested; there is no way to figure the loss of top soil. For 25 miles along a state road bordering Lake Keuka, highway department steam shovels spent days removing mud that a week before was growth-producing soil in vineyards.

That this soil loss problem is not new is graphically evident by the section's raw gullies, rotting posts, sagging vines, rampant growth of wild brambles, sumac and weeds;

signs of the discarding of portions of vineyards when the soil washed down to the lakes. Over the past 25 years actually only a small proportion of the vineyard acreage has been abandoned, but a survey by the Soil Conservation Service reveals that nearly two-thirds of the hillside vineyards are seriously affected by erosion, to the extent that precautions on the part of growers will be a necessity if the productivity of their vineyards is to be maintained. These growers realize, too, that they would have a hard time duplicating anywhere else the climate and the light fertile soils of their section and produce the type and quality of fruit they are proud of today.

Just as the Soil Conservation Service has pointed out dangers of soil losses to these growers and to fruit growers in other sections, it has shown through research tests at the Lake Keuka experiment station that simple conservation experiments can stop soil erosion and extend the life of vineyards beyond the usual 30 to 40 years of crop production. Workers at the station point out that the best way to halt erosion is to change to the contour system of setting vineyards. Terracing has been used by European vineyardists for centuries.

Other measures, designed and used for established plantings, include special cultivation systems, cover crops and incorporation of organic material in the light soils. Besides these, the usual methods for stopping gullies are being successfully followed.

Growers are aware of their predicament, so much so that more than 500 of them recently signed a petition asking the Soil Conservation Service for help to make the change to a soil conservation system of grape culture. Because they realize the need for saving their soil and because they have the help of specialists, it's a 10 to one chance that erosion troubles in New York's Finger Lakes vineyards will be rapidly overcome. What is accomplished there will be welcomed as knowledge for guiding grape growers in all other parts of the country in their work to save and maintain valuable soil.

30 YEAR FRUIT FERTILIZER FACTS

Unfertilized 23-year-old York apple tree
in Dean Price Orchard in Virginia.

Fertilized 23-year-old York apple tree
in Dean Price Orchard in Virginia.

APPPLICATION of fertilizers to apple trees for the most profit has always remained a perplexing problem to Virginia growers. With the great variety of reports on responses to fertilizer treatments and every orchard in itself a special problem for fertilizer solution, it is no wonder that so much confusion prevails.

There are instances in Virginia where fruit can be grown profitably, quoting Hedrick of New York, "Without a single ounce of fertilizer." Years of observations based upon much experimental evidence show, however, that more profitable returns are secured from applications of some form of nitrogen and in some instances from a combination of nitrogen with either phosphorus or potash or both.

After all, the best procedure is to go to the fruit trees themselves with

By FRED W. HOFMANN

Virginia Agricultural
Experiment Station

certain questions for the clearer and more direct answers. Let us ask some questions of trees that have been the highest yielders among their general group over a period of some 30 years. Let us ask them what was the initial soil fertility at the time of planting, what were the fertilizer treatments during this 30-year period and how did the respective treatments show up in yield responses?

Five of the highest yielding York Imperial, five of Stayman and five of Winesap apple trees were selected for this quiz. These are growing in

the orchard of the Virginia Agricultural Experiment Station just out of Blacksburg. At this writing the trees are 30 years of age.

The soil of this orchard, which closely resembles the Hagerstown series and has been until recently classified as such, belongs to the Dunsmore series. The Hagerstown series includes the large orchards of the Shenandoah Valley as well as the "apple pie ridge." The Cecil takes in those generally south and southeast of the Blue Ridge Mountain section of Virginia.

Although a difference in the chemical content exists between these three as well as some of the others of Virginia, for general practical purposes in this discussion the results secured from those of the Dunsmore should apply rather satisfactorily.

(Continued on page 21)

TABLE I
Yield Responses of Five Highest Performers

Year	YORKS					STAYMAN					WINESAP				
	NK**	NP	NP	C***	N	NK	NP	N	N	NPK	NK	N	N	NPK	NP
	II-4-19 Yield* Lbs.	II-6-14 Yield Lbs.	I-3-19 Yield Lbs.	II-5-20 Yield Lbs.	I-2-14 Yield Lbs.	II-7-2 Yield* Lbs.	I-3-1 Yield Lbs.	I-2-3 Yield Lbs.	II-2-1 Yield Lbs.	I-8-9 Yield Lbs.	I-7-1 Yield* Lbs.	I-2-2 Yield Lbs.	I-2-1 Yield Lbs.	III-7-8 Yield Lbs.	I-6-7 Yield Lbs.
1918	0	2	2	0	1	2	24	7	0	3	1	1	1	0	3
1919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1922	0	87	150	48	5	43	0	6	8	0	0	0	0	21	0
1923	148	58	192	168	97	84	388	336	25	144	64	90	56	108	11
1924	525	650	750	750	700	800	365	700	100	500	225	200	200	300	90
1925	50	0	0	50	0	300	700	500	250	400	550	0	0	500	300
1926	950	750	300	430	400	800	500	500	900	400	400	350	300	350	300
1927	50	0	0	50	0	0	150	30	0	0	0	30	30	50	0
1928	600	750	275	700	690	900	450	900	400	800	350	340	350	290	550
1929	1050	1250	1600	400	1250	1250	550	600	950	700	750	700	450	400	300
1930	620	1100	60	1100	600	850	1000	1020	1250	900	700	650	450	400	760
1931	1200	800	1150	800	1150	950	100	300	1100	600	600	500	550	700	700
1932	200	1000	0	525	250	1500	1550	1150	600	1700	750	575	1100	450	750
1933	1125	850	1300	850	1000	100	50	0	100	0	250	100	100	25	150
1934	200	550	50	700	100	1450	1550	1100	1200	1200	1400	500	1100	1100	1175
1935	1900	600	1850	1100	1250	350	950	900	1000	1200	1250	1850	1900	1350	950
1936	50	150	0	100	50	1250	725	100	650	800	800	750	450	525	700
1937	1550	1000	1400	1300	1400	0	1350	1650	1200	275	800	1050	600	1000	400
1938						625	765	500	575	1000	375	150	300	125	750
1939						600	825	1500	550	325	400	925	1000	875	275
Totals	10218	9597	9079	9071	8943	11854	11902	11799	10859	10047	9665	8761	8937	8569	8164

*Ranked in order of yield from left to right.

**Fertilizer treatments—N Nitrogenous, P Phosphatic and K Potassic.

***No fertilizers applied except nitrogen from 1934 to 1937 inclusive.

Fertilization in all cases was withheld after 1937.



A promising outlet for surplus sour cherries is the juice and beverage industry.

RESULTS OF A DEMONSTRATION SALE OF CHERRY COCKTAIL

By Donald K. Tressler and Carl S. Pederson
New York State Agricultural Experiment Station

THE annual production of "red sour cherries" has increased in the past decade from about 60,000 tons to 80,000 tons. In 1939 the production was nearly 100,000 tons. There is often a surplus which forces down the price and depresses the market. In some years this situation is so serious that many of the growers sell at a loss, and at times a portion of the crop remains unpicked.

There is a very real need for additional outlets for cherries. One of the most promising of these is juice and beverages made from juice. Since many people consider cherry juice to be pleasing in flavor and color, the commercial possibilities of this juice are worth investigating.

Studies of the making and blending of cherry juice conducted in the past five years have indicated that a blend of Montmorency and English Morello juice is superior in flavor, aroma and color to either one alone. This blend is, however, too tart and too strong to please most people; consequently, the palatability of sweetened, diluted juices was studied. Some persons preferred the juice diluted with half its volume of 15 per cent sugar syrup; others thought that this blend was too tart and strong, consequently preferred the juice when diluted with an equal volume of 15 per cent sugar

syrup. All of those tasting the juice were enthusiastic about the flavor of the blends. Therefore, a sufficient quantity of the blend was prepared, flash-pasteurized and packed in 20-ounce cans to permit a demonstration sale in six stores of the Market Basket Corporation.

Experimental work had demonstrated that blends of hot-pressed and cold-pressed cherry juice are somewhat superior to either alone. Therefore, the following four lots of cherry juice were prepared according to the procedures described in New York State Experiment Station Circular No. 180: (1) Hot-pressed Montmorency juice, (2) cold-pressed, pectinol-clarified Montmorency juice, (3) hot-pressed English Morello juice, and (4) cold-pressed pectinol-clarified English Morello juice. Each lot of juice was filtered, and then blended together. The mixture was diluted with an equal volume of 15 per cent sugar syrup. The composition of the final blend, which contained approximately 15 per cent total solids, was as follows:

	Per cent
Cold-pressed Montmorency juice.....	28.1
Hot-pressed Montmorency juice.....	9.4
Cold-pressed English Morello juice.....	9.4
Hot-pressed English Morello juice.....	3.1
15% sugar syrup.....	50.0
	100.0

The blend was strained, deaerated, flash-pasteurized and packed in cans lined with "berry enamel" according to the procedure described in the circular referred to above. The can selected was the tall No. 2 can (20-ounce) commonly used for juices.

The three-color label used on the cans shows a glass filled with cherry juice placed in front of a cluster of Montmorency cherries. The label bears the statement, "Prepared from the juice of tree-ripened Montmorency and English Morello cherries blended with an equal volume of 16 per cent sugar syrup. *Ready to Drink—An Appetizing Cherry Drink.*"

The cherry cocktail was placed on sale in six representative stores of the Market Basket Corporation on November 27, 1939. The product was given no special advertising; however, the cans were arranged in a floor display in a prominent location in each store. A notice appeared in the news columns of each of the local newspapers indicating that a trial sale of a new fruit beverage produced at the Geneva Experiment Station was being conducted. In five of the stores the product was offered at a nine cent, or three for a quarter price; in the sixth (Ithaca) the price was 10 cents or two for 19 cents. The results of the sale are shown in Table 1.

At the end of the sale the manager of each of the six stores was asked to fill out a questionnaire. The questions and answers are listed below:

1. (a) *What were your customers' reactions to Cherry Cocktail?* Five answered "favorable" or "very favorable"; one, "slow, but very good."

(b) *What were their general comments?* All six answered "good" or "very good."

(c) *Were there any complaints?* Five answered "none"; one, "one."

2. *Do you think it would be worth while to add Cherry Cocktail to the line of juices offered by your store?* All answered "yes".

3. *Did your customers continue to ask for Cherry Cocktail after the supply was exhausted?* All answered "yes".

4. *If offered at a three for a quarter price, would you expect a fairly steady demand throughout the year?* Five answered "yes"; one, "don't know".

5. *Do you think Cherry Cocktail would sell as well or better than grape juice?* Five answered "yes"; one, "better than grape juice".

6. *Do you think Cherry Cocktail would sell at two for 19 cents price?* One answered "no"; two, "yes"; three, "yes, but not as fast".

7. *Will it replace or supplement other juices?* Four answered "supplement"; two, "replace to some extent".

(Continued on page 20)

Take a Leaf from the Book
of the Good Orchardist

- The Time:
DELAYED DORMANT
- The Problem:
SCAB and APHIS
- The Object:
LOW-COST CONTROL

FRUIT



BUDS

SCAB and APHIS

Every year lime sulphur plus "Black Leaf 40", two-sprays-in-one, is economical protection. Its effectiveness is good profit-insurance. No cost for applying when added to any of the standard sprays. "Black Leaf 40" kills green and rosy aphids, bud-moth, red-bug, leafhoppers, leaf-miners and codling moths. It is versatile, dependable and time-tested. "Black Leaf 40" does not harm buds or foliage.

4018

**TOBACCO BY-PRODUCTS & CHEMICAL
CORPORATION, INCORPORATED**
LOUISVILLE, KENTUCKY

**"Black
Leaf"**

STATE NEWS

MICHIGAN—Glistening in the early morning sunshine, strawberry plants in some of the Frank Rick & Sons' patches in Berrien County in the spring of 1938 presented a jewel-like appearance. As the sun melted the eighth inch coating of ice on the leaves and blossoms it was found that the plants were in excellent condition, while nearly 75 per cent of the plants in adjoining patches not having an ice coating had been killed by frost.

The ice coating on the plants wasn't a phenomenon. The sprinkler system in these patches had been in operation during the night when frost occurred and by morning the eighth inch coating had formed.

Profiting from this experience, Walter F. Ricks reports that their sprinkler system was again put into operation in the spring of 1939 when frost was predicted, only this time it was started early in the morning as the frost occurred at a later hour.

Just before their berries ripened last year, the Ricks irrigated them and thus reduced to a minimum the number of "buttons" and "nubbins" on the plants. They plan to enlarge their irrigation system this year to care for additional patches.

MINNESOTA—A heavy snow coming late in the season, if followed by unseasonably cold weather, is likely to result in sunscald damage to the southwest portion of the trunk of smooth-barked apple trees. Under such conditions the trunk is exposed not only to direct rays of the sun, but also to reflected rays from the snow around the tree.—J. D. WINTER, Sec'y, Mound.

GEORGIA—Frank M. Gaissert of Griffin, who has extensive fruit interests in Spalding County, was elected president of the Georgia Association of Peach Growers at the annual meeting of that promotional organization held in March. He succeeds Wilmer Dickey of Musells, who declined a third term. Other officers elected: Joe R. Gay of Gay, vice-president; W. C. Shore, Baldwin, vice-president; John T. McKenzie, Montezuma, secretary-treasurer; G. Emmett Snellgrove, Macon, executive manager.

KANSAS—With a normal amount of surface moisture in the ground, Kansas nurserymen are anticipating increased sales in all departments. The unusual drought and high summer temperatures of the past few years has caused an abnormal loss of forest, fruit and ornamental trees, which should and likely will be replaced.—G. W. KINKEAD, Sec'y, Topeka.

NORTH DAKOTA—Because of the interest in the hardy apricots growing on the grounds of the North Dakota Agricultural Experiment Station some notes on their behavior in 1939 will prove of value to growers.

Observations made last year on these hybrid apricots did not give any additional information on fruit quality, since practically all blossoms were frozen on May 11. Warm weather preceding this date, ranging as high as 90 degrees F., played a prominent part in this destruction of blossoms. Rapid growth of these hybrids (Moorpark x *Sibirica*) is one feature that might be mentioned. Two-year tops on three-year roots have made growth close to eight feet in two seasons.

In a block of 1200 F₂ trees of this cross, great variation was noted in size, time of blooming, growth, leaves, etc., but in general trees began to fruit at three and four years.

Scout, a straight seedling raised from seed

imported from Manchuria and grown at the Morden Experiment Station, Morden, Manitoba, is apparently the best variety to fruit so far. Growers buying any of these apricots should purchase hardy apricots of some other variety as a pollinator.—HARRY A. GRAVES, Sec'y, Fargo.

KENTUCKY—We had a splendid opportunity this year in the variety test orchard at the experiment station at Lexington to obtain information on peach varieties we have been hearing about that would stand extremely cold temperatures. None of these special

NAI ANNUAL MEETING

Distribution, economics and research insofar as King Apple is concerned will be thoroughly covered by leading authorities during the annual meeting of the National Apple Institute to be held in the Powers Hotel, Rochester, N. Y., April 17-18. Highly interesting and valuable research studies have been suggested by numerous scientists and it is expected some concrete action will be decided upon at the meeting. Growers from 25 states are expected to attend, and officials invite anyone interested in the phases up for discussion to be present.

varieties even lived through the many sub-zero nights we had in January.

Fruit buds in peach orchards throughout the State, with the exception of the Paducah district in southwestern Kentucky, were killed by the low temperatures. We are unable as yet to determine the winter injury to the trees. Growers have been advised to delay pruning until new growth starts.

Many acres of our berries went through the cold weather without straw or snow protection. During the 1940 harvest a number of demonstrations will be observed to obtain the comparative amount of injury to our strawberry plants where mulched as against no mulch.—T. COOPER, Sec'y, Paducah.

UTAH—The Utah State Horticultural Society completed one of the most successful conventions in its history recently at Salt Lake City. Judge J. A. Howell, president, presided over the 200 growers in attendance.

William Case, extension horticulturist from the Colorado Agricultural College, delivered the key speech of the convention on marketing and marketing agreements. "Bill" told of the benefits of the Federal Marketing Agreement to the peach growers of Colorado last year where the marketing agreement act was in operation. This federal act provides for the control of the volume and grade of fruit moved in interstate commerce and allows the growers to improve markets and prices by keeping low grades and inferior fruit off the market.

Case stressed the importance of growers knowing all the facts of their industry. They should know what volume is shipped each year, where it goes, at what price it is sold, in what containers it is moved, etc., before an intelligent approach to the marketing problem can be made. Growers should also know who buys their fruit and what the consumer demands.

In his discussion of quality, Case pointed out that a survey conducted in their peach markets showed that 80 per cent of the purchases made by women in grocery stores is "inspirational." That is, they buy commodities because the commodities look good and appeal to the eye. Under such conditions it becomes obvious how valuable it is to put up a desirable product that will appeal to the eye and the appetite.

Officers of the society were re-elected by acclamation: Judge J. A. Howell, Ogden, president; John Burningham, Bountiful, vice-president.—A. STARK, Sec'y, Logan.

TENNESSEE—Growers in the Cleveland area have organized a co-operative association to handle their marketing this season. S. N. Varnell, the leading peach and small-fruit grower of this section, was elected president of the association. It is understood that a large part of their output will be quick frozen in consumer-like cartons at the plant built co-operatively by the TVA and University of Tennessee Engineering Department to test new equipment and processing methods.

After three years of experimenting, the plant is now functioning wonderfully. A splendid pack of peas, lima beans, strawberries and peaches was turned out last year. Vegetables were frozen in a brine solution and fruits in a solution of invert sugar.—A. N. PRATT, State Horticulturist, Nashville.

WEST VIRGINIA—Drama entered into the apple by-product picture last fall during the apple harvest festival held in Martinsburg. Over a thousand people tasted four different blends of apple juice, stated their preference in regard to them and thereby laid the foundation for future production of specific blends at the Inwood Community Packing Plant.

H. W. Prettyman, extension horticultural specialist in marketing at West Virginia College of Agriculture, reports that the 8000 bushels of apples processed during December and January at the Inwood plant consisted of Winesaps, Staymans, Black Twigs and Grimes. The juice from these was used in varying proportions and carefully blended to give a juice of full body and fine aroma and flavor. Flash pasteurizing methods originally worked out by the New York Experiment Station were used in preparing the juice.

The quarter of a million 12-ounce cans of processed juice went to local and Washington, D.C., markets under the Johnny Appleseed brand.

NEW YORK—The recent national Apples for Health merchandising drive, which was designed to offset loss of foreign markets, is credited with advancing domestic consumption of apples 300 to 400 per cent in certain key markets, according to Lawrence Howard, chairman of the Eastern New York Apple Industry Committee. Substantial part of the more than 60 per cent increase in January apple movement from New York State cold storages is also credited to the drive.

OHIO—C. E. Dutton, newly elected president of the Ohio Apple Institute, reports that the institute is conducting educational work among growers to see that the public receives better fruit, and among consumers to educate them on the kinds of apples to use for various purposes. Other officers elected at the recent meeting: Harry Lutz of Carroll, vice-president; J. W. Morgan, Jackson, treasurer; H. L. Mantle, Painesville, secretary.

KING STRAWBERRY

VERSUS

JACK FROST IN FLORIDA

PLANT CITY,

NATION'S WINTER STRAWBERRY CAPITAL, CARRIES ON DESPITE ADVERSE WEATHER

By J. FRANCIS COOPER

Florida Agricultural Extension Service

WHEN a zealous reporter, in preparing copy for the Festival Edition of his paper early in March, stated that the Plant City, Fla., market had shipped 6,620,314,182 pints of strawberries during the last 24 years, his ambition was slightly better than his mathematics. At the present rate it would require some 300 years for that many of the luscious red fruits to move from the winter strawberry capital.

Plant City can't, and doesn't, claim six billion pints of strawberries. But the 20 million pints which leave there in an average year provide the makin's for shortcake in homes throughout a good part of the land at a time of the year when few other fresh strawberries can be had. They mean jingling cash registers for handlers and shippers, paydays for labor, and freedom from mortgage worries for producers.

Because of the extreme unkindness of Old Man Winter in late January, Florida strawberries rolling to market during the early 1940 season have been a mere trickle. The first pint of the season usually appears in Plant City anywhere from the middle of November to Thanksgiving. A few truckloads may find their way to market during December, but it is about January 1 before carload movement begins. This year the weather was decidedly cool during the first three weeks of January, and the month ended with freezes which plucked all berries and blossoms from the plants. Continued cool, damp weather kept the plants from zipping back into production, and by March 6 movement was still barely above minimum.

Witness the March 2 report of the Agricultural Marketing Service and

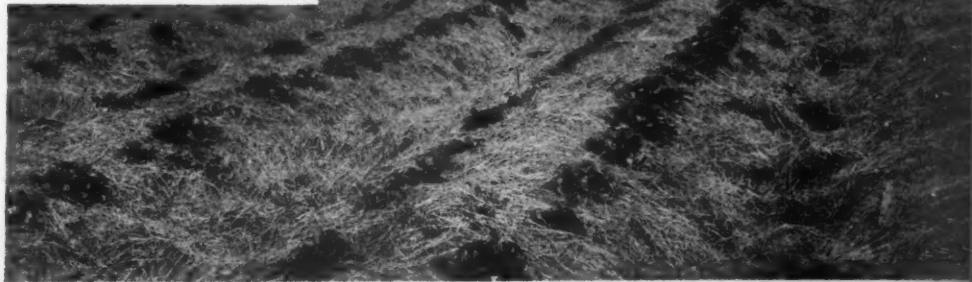
State Marketing Bureau. Seven cars had been shipped by rail, compared with 783 to the same date last year. By truck 165 carloads had moved in 1940, 687 in 1939. Just about 12 per cent as many berries had matured by March 2 this year as last.

Growers have talked disaster until they are all talked out. Now they have drawn their belts a little tighter and are hoping that shipments will be heavy during the latter half of March and will continue beyond the usual cut-off date, around April 1.

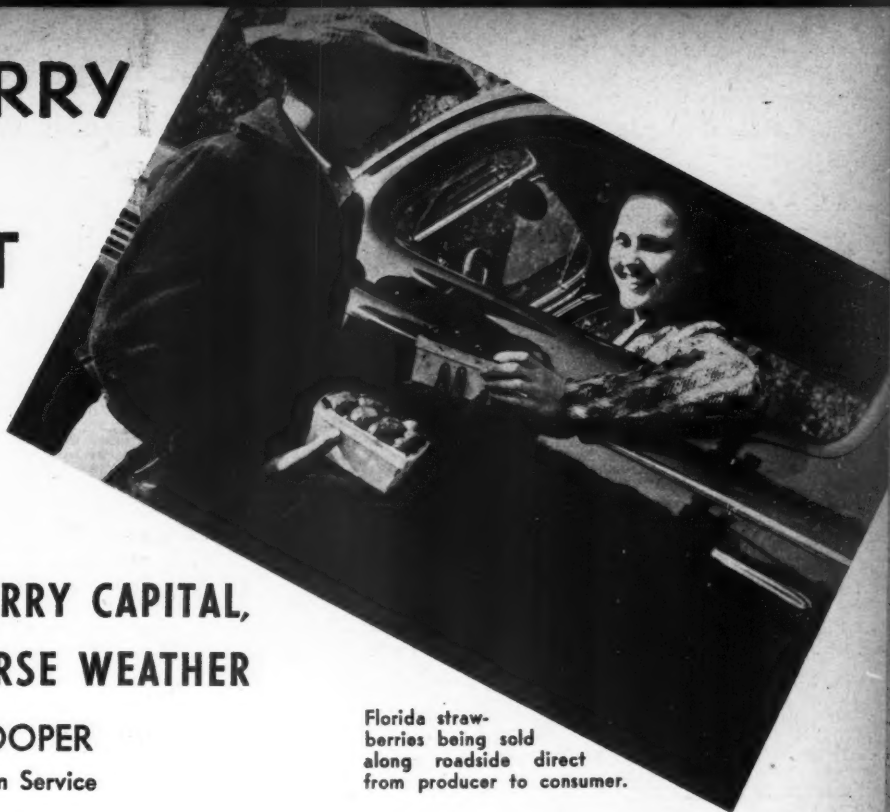
H. J. Browning has cashed in on the cold weather, however. He had four acres strawed and managed to save his bloom if not his mature berries from the freezes. He has had some good berries to sell right along. Prices have ranged from 16 to 25 cents a pint, and from seven acres he had made more money to March 6

(Continued on page 15)

A well mulched strawberry field. Mulched berries reach the market free of grit, thus increasing their attractiveness and appeal to the consumer. Reproduced from U.S.D.A. Farmers' Bulletin 1026.



AMERICAN FRUIT GROWER



Florida strawberries being sold along roadside direct from producer to consumer.



Loading a refrigerator truck with strawberries for shipment North. Fresh berries from Plant City are sent to markets throughout the United States and to some points in Canada.

**THERE'S
NO
MONEY
IN
STUNG
APPLES!**

**GET *Codling Moth* EARLY
AND GUARD AGAINST LATE
INFESTATION LIKE LAST YEAR**

**Use S-W
SUMMER-MULSION**

*For the Control of Eggs and
Larvae of Codling Moth*

Get codling moth before it gets your crop—for, as every grower knows, **THERE'S NO MONEY IN STUNG APPLES!**

Get codling moth early, and then **GUARD** against a late infestation, such as was experienced last year, by spraying your apples with Sherwin-Williams **SUMMER-MULSION** for the control of the eggs and larvae of the codling moth.

Don't let down your guard! Many growers in 1939 thought they had codling moth controlled, only to find the hot, dry weather in late August and September resulted in a late brood of codling moth which almost overnight **TURNED NO. 1 APPLES INTO CULLS.**

Play safe this year! Plan **NOW** to use **S-W SUMMER-MULSION** and avoid a repetition of 40% to 50% of stung fruit next fall. Years of successful use in the leading apple growing sections of this country have demonstrated the superiority of **S-W SUMMER-MULSION** as a spray to control codling moth.

Here are the outstanding qualities of **S-W SUMMER-MULSION**: Quick Breaking—High Oil Deposit—Does Not Spot the Fruit—Economic to Use.

S-W SUMMER-MULSION is still a paste type of oil emulsion. It is **NOT A TANK-MIX EMULSION**; therefore, it will deposit more actual oil per square inch of apple surface which means better control of codling moth. It does not spot apples when used with Arsenate of Lead or Nicotine-Bentonite.

For **SAFETY FIRST** use **S-W SUMMER-MULSION** for the control of Eggs and Larvae of Codling Moth.

INCREASE DEPOSIT BY USING S-W SPRALASTIC

S-W Spralastic is a spreader and deposit builder for use on apples for the control of Codling Moth. It will increase the deposit of **S-W Arsenate of Lead** on apples 3 to 4 times. Also possesses ovicidal value in the control of Codling Moth.



SAFETY FIRST ALSO WITH S-W SAFE-N-LEAD

In scheduling your 1940 spray program, plan now to insure "safety first" by using **S-W Safe-N-Lead**, the patented zinc compound in convenient form for use with arsenates of lead to prevent arsenical injury to fruit and foliage. It also improves arsenate of lead coverage.

THE SHERWIN-WILLIAMS CO.

1940 Codling Moth Spraying Schedule for winter varieties of apples to be washed

APPLICATION	PER 100 GALS. OF WATER
CALYX SPRAY	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead
FIRST COVER SPRAY (A week to 10 days after the bloom)	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead
SECOND COVER SPRAY (15 to 20 days after Calyx)	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead 1½ pts. S-W Spralastic ½ gal. S-W Summer-Mulsion
THIRD COVER SPRAY (7 days after second cover)	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead 1½ pts. S-W Spralastic ½ gal. S-W Summer-Mulsion
FOURTH COVER SPRAY (7 to 10 days after third cover)	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead 1½ pts. S-W Spralastic ½ gal. S-W Summer-Mulsion
SECOND BROOD—FIRST COVER	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead 1½ pts. S-W Spralastic ½ gal. S-W Summer-Mulsion
SECOND BROOD—SECOND COVER (10 days to 2 weeks after first cover)	3 lbs. S-W Arsenate of Lead 1 lb. S-W Safe-N-Lead

SAFE-N-LEAD should be added to the tank first.

FOR EARLY SUMMER VARIETIES NOT TO BE WASHED
CALYX SPRAY—3 lbs. S-W Arsenate of Lead and 1 lb. S-W Safe-N-Lead to 100 gals. of water.

FIRST COVER—3 gts. Nico-Mulsion, 3 lbs. S-W Arsenate of Lead, 1 lb. S-W Safe-N-Lead to 100 gals. of water. **SECOND, THIRD and FOURTH COVER SPRAYS**, each 7 to 10 days apart, use 3 gts. Nico-Mulsion to 100 gals. of water.

THE SHERWIN-WILLIAMS CO.

101 Prospect Ave., Insecticide Department, Cleveland, Ohio

**SHERWIN-WILLIAMS
SPRAY AND DUST MATERIALS**

KING STRAWBERRY

(Continued from page 13)

this year than he did from 16 acres during the whole 1939 season.

Strawberries have been grown around Plant City for more than half a century. During the last 12 years production has increased from 50 to nearly 100 per cent in good seasons, and has averaged around 18 million pints since 1932. Florida acreage ranges around 8000, of which Plant City supplies the major portion.

Many production and marketing practices have not changed since the industry became established. County Agents Alec White and Marshall Watkins tell me that growers still obtain their nursery plants from Arkansas and Maryland, set them in February or March, set runners from them to another nursery in June, and then set runners from both in September, leaving the original plants to produce berries also. The Missionary variety is grown almost exclusively.

The plants are grown mostly in double-row beds from four to five feet wide, with some growers using single-row beds about three feet wide. Fertilizers are applied usually at bedding time, again when the plants start setting berries about the first of November, and again about January when the plants have borne for a while. After the plants are set, hoeing is the principal cultivation given. About 10 per cent of the Plant City berries are strawed as the plants begin to bear.

Many growers irrigate their fields during dry weather, using either overhead pipes, subirrigation, or surface flooding. Subirrigation is accomplished by turning water into the land through tile placed 18 to 20 inches below the surface. The water escaping at the tile joints rises to the surface by capillary action. The method is best used on land having a compact subsoil.

In addition to straw, cypress board troughs are sometimes used to protect the plants from cold weather. These are most satisfactory on single-row beds, where the V-shaped troughs can be inverted over the plants when frost threatens.

When the berries begin to mature, the Plant City area's 10,000 people engaged in the strawberry industry are supplemented by about 2000 transient laborers who come in from Georgia and elsewhere. In normal seasons this transient labor is quite necessary.

Formerly the fruits were packed exclusively in quart cups, now they go to market in pint containers. The transformation took place overnight. During the 1932 season, when consumer purchasing power was at a low ebb throughout the country, the buyers decided that they could sell pints when they couldn't easily dispose of

(Continued on page 24)



PLENTY OF WORK HERE FOR A FORD V-8 TRUCK



Dual rear wheels and tires, as shown, are optional at extra cost

Look out across the valley. A patchwork quilt of farmland and fields of growing grain; farm homes; barns and sheds for cattle, hogs and sheep. Crops to move to crib or granary; crops and livestock to move to market.

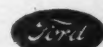
Look ahead. The man who makes out on the farm today finds newer and better ways of doing things. He doesn't just grow crops and feed livestock. He grows and feeds profitably. More work done in less time with fewer hands.

Crops in at the right time and stock on the market at the right time. That usually means power farming—the machinery to do

the job better, quicker, cheaper. That also means there's plenty for a Ford V-8 Truck to do in this picture. It is a steady worker in the fields and fast on the roads.

There's a Ford V-8 Truck for any farm, any farmer. There are 42 different body and chassis types to choose from—the right piece of equipment to do a lot of different jobs for you. Check this with an "on-the-job" test. Do the checking right in your own fields and roads, with you or your hired hand at the wheel. Make all arrangements for this "on-the-job" test with your Ford dealer.

• Ford Motor Company, Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons and Transit Buses





YOU CAN *Save* BOTH YOUR CROP AND YOUR MONEY

Using the extra effectiveness of *Alorco Cryolite*, orchard operators are actually getting better pest control at lower cost. These advantages have proved out for control of codling moth and other chewing insects on fruit and ground crops.

In Northwestern apple orchards, the use of *Alorco Cryolite* in a mixed spray program reduces worm count, and lowers insecticide cost on both a per-acre and per-box-yield basis. A contributing factor to the success of *Alorco Cryolite* is the extreme fineness of particles, which makes the insecticide spread more evenly and easier to remove with the bath which dissolves the sticker.

The latest developments in the use of *Cryolite* are the protection of beans, soybeans, tomatoes, corn, cotton, tobacco, cabbage, sugar cane, and other crops. Write to us for the new booklet, "Quotations from Published Data on *Cryolite* as an Insecticide," which gives up-to-date information about these applications. ALUMINUM COMPANY OF AMERICA, 1909 Gulf Bldg., Pittsburgh, Pa. (Sales Agent for ALUMINUM ORE COMPANY).

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ALORCO

CRYOLITE  INSECTICIDE

THE GOOD EARTH

(Continued from page 7)

quately aerated and retentive of water.

From a chemical point of view, sand and silt particles are usually inert because they consist of the very resistant mineral, quartz. Quartz particles do not contribute anything to the nutrition of plants. They constitute the soil skeleton. The active portion of the soil is in the finer fractions, the clay and the humus. This point will be clarified in a subsequent paragraph.

Soils receive all of their heat energy from the sun. Dark-colored soils absorb more of this energy than light-colored ones. Therefore, organic matter in the immediate surface tends to darken the soil and increase its ability to absorb heat. The presence of water in soils, however, leads to a cold soil, especially in the early spring. It takes about four times more heat to warm up a pound of water to a given temperature than to warm up a pound of dry soil. Consequently, it is essential to drain soils in order to have warm soils. Those soils with a low content of large pores are usually wet and cold in the spring.

A warm soil in the early spring is necessary to speed up bacterial activity as well as the growth processes in the tree itself. Unless bacteria are active, the nitrogen in organic matter or in ammonium compounds will not be nitrified to nitrates. This will reduce the available nitrogen supply and require early spring applications of nitrate fertilizers.

The most common nutrients that are usually considered in the growth of plants are nitrogen, phosphorus, potassium and calcium (other necessary nutrients will not be considered in this discussion). The amount and mobility of these elements within the soil depend largely upon the nature of the soil and the fertility applications. The statement was made in a previous paragraph that the clay and humus fractions were the active portions of the soil. This simply means that, with the exception of nitrate nitrogen, the common plant nutrients are usually found associated with the clay and humus. Ammonium, potassium, calcium and phosphate ions are adsorbed or held on the surfaces of clay and humus. Unless there is an excess of these ions in the soil above the amount necessary to satisfy the adsorptive capacity of the clay and humus, there will not be many of them in solution. This fact may be more

(Continued on page 18)

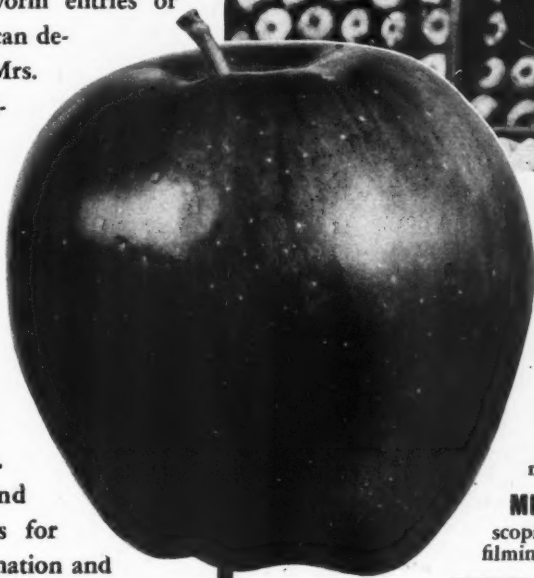
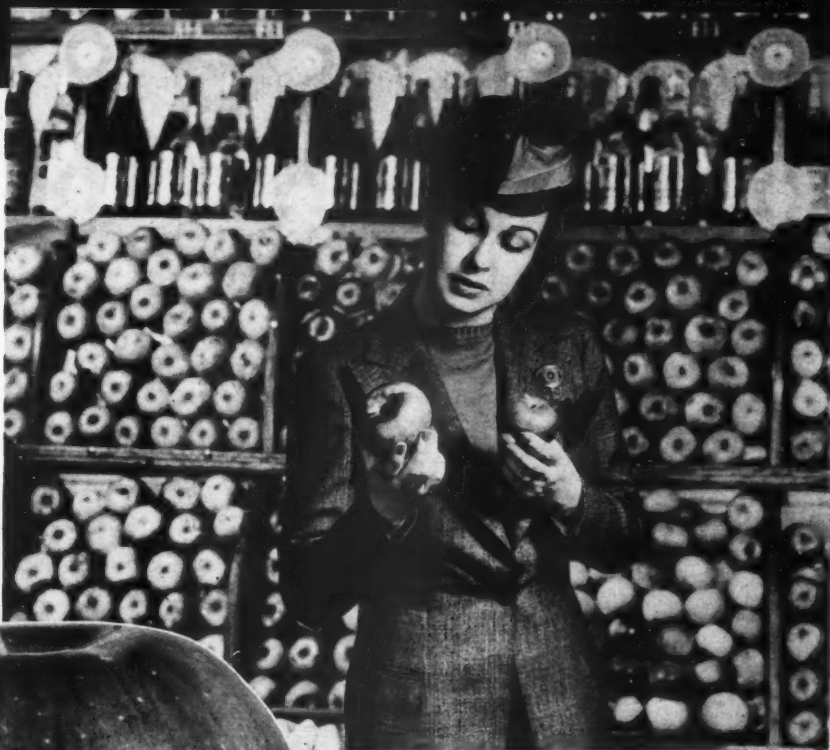
Watch for
JUNE DIRECTORY
ISSUE

THE SPRAY SCHEDULE COUNTS IN THE SALE!

STRANGELY enough, few housewives actually bite into an apple before they buy. They depend more on first impressions . . . particularly on looks.

OBVIOUSLY, an apple gets off to a bad start if it doesn't look good . . . if it is marked by scab, worm entries or stings. Therefore, you can depend on the fact that Mrs. Consumer is "spray conscious" . . . that a good spray schedule *really* counts as an important factor in influencing her to buy *your* apples.

NOW IS THE TIME to decide on a good, sound spray program. Your Orchard Brand Dealer is headquarters for the *correct* spray information and **CORRECT** spray materials. Choose your program well . . . be timely and thorough in its application . . . use Orchard Brand Spray Materials throughout the season **AND YOU WILL FIND THAT THIS KIND OF WELL ORGANIZED SPRAY PROGRAM SELLS APPLES!**



A PART OF THE ORCHARD* BRAND LINE FOR THE FRUIT GROWER

ARSENATE OF LEAD . . . Standard and "Astringent," with the unique physical properties that have established a new high in coverage and control.

SPRAYCOP* . . . Copper Fungicide having high active copper content and wide safety margin.

MICRO-SPRAY* SULFUR . . . True microscopic particle size. High performance records in filming and fungicidal effectiveness.

APPLE DRITOMIC* SULFUR . . . Maximum scab control properties among dry sulfur compounds, due to patented sodium thiosulfate feature.

ZINTOX* . . . THE EXCLUSIVE Basic Zinc Arsenate. An effective apple, pear and grape spray for control of codling moth and berry moth.

NICOTINE SULFATE . . . Highest quality and uniformity.

E-D-E* . . . (The Original) Ethylene Dichloride Emulsion for peach tree borer control.

DORMASOL* . . . Oil Spray . . . Maximum active ingredients.

OIL EMULSION "83"* . . . A stable, flowable emulsion.

PLAY SAFE. USE THE PROVEN ORCHARD BRAND MATERIALS RIGHT THROUGH YOUR SPRAY SCHEDULE.

GENERAL CHEMICAL COMPANY

Executive Offices: 40 RECTOR STREET, NEW YORK, N. Y.

Sales Offices: Atlanta • Baltimore • Boston • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Houston • Kalamazoo • Kansas City • Los Angeles • Milwaukee • Minneapolis • Montezuma (Ga.) • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • St. Louis • Utica (N. Y.) • Wenatchee (Wash.) • Yakima (Wash.)
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

THE GOOD EARTH

(Continued from page 16)

obvious if the different nutrients are compared with respect to tightness with which they are held in the soil.

Nutrient	Status in the soil	Mobility in the soil
Nitrate nitrogen	Always in solution	Highly mobile
Ammonium nitrogen	Held loosely by the soil—readily nitrified to nitrate form.	Mobile but not as readily as nitrates
Potassium	Held by soil—found in solution when present in quantities in excess of adsorptive capacity of clay and humus	Somewhat mobile, dependent upon the texture of the soil
Calcium	Similar to potassium	Similar to potassium
Phosphorus	Held very tightly	Very immobile, becomes fixed near point of application

Although nitrogen fertilizers are rather mobile in most soils, potassium and calcium only move readily in sandy and silty soils. Phosphorus remains fixed in practically all soils with the exception of extremely coarse sands. Even though these nutrients are adsorbed, they are available to the plant if the roots come in contact with the clay and humus particles. These facts mean that the

plant must have a well-developed root system in order to make the most efficient use of the nutrients in the soil.

Nitrogen fertilizers applied as a top-dressing will penetrate to the roots of the subsoil. The same will be true to a certain extent with potassium and lime on the more open soils. Phosphorus, on the other hand, will remain within a few inches of the point of application. Some orchardists use special means to get the more immobile fertilizers down to the zone of root concentration by applying the nutrients in holes in the soil.

From the moisture point of view, the ideal soil should absorb water readily, permit the excess water to drain through the profile, and hold sufficient moisture for use by the plant. As previously stated, these factors are closely associated with the nature of the pore space. In regard to the availability of water to plants, recent experimental evidence points out that the capillary movement of water within the soil is a rather slow process. The plant apparently obtains water as the roots come in contact with the moisture films around the particles. Consequently, the roots must be where the water is located; moisture does not move fast enough, or over large enough distances to supply the plant with sufficient water for growth. This fact also calls attention to the necessity of a well-de-

veloped root system for the efficient use of soil moisture. This principle is recognized in the drainage of soils. Draining soils makes more water available to plants because of more extensive root systems on well-drained soils.

Soil aeration has been one of the most widely underestimated factors in plant growth. The development of the above-ground portions of plants depends upon a good root system. The efficient utilization of water and nutrients requires extensive root development. The growth of roots within the soil is very greatly dependent upon soil aeration. The plant root gives off carbon dioxide and takes in oxygen from the soil air during its growth activities. Growth is stopped when respiration is prohibited. Unless sufficient oxygen is present in the soil pores and unless the carbon dioxide given off by plant roots has ready access to the atmosphere, poor aeration results. Lack of aeration restricts the root system and the plant is hindered in the utilization of nutrients and water.

Well-aerated soils should have more than 10 per cent of the total pore space made up of the large, non-capillary pores. As the content of large pores increases twofold, the aeration increases fourfold. Thus, poorly drained soils are always badly aerated. Also, soils with compacted



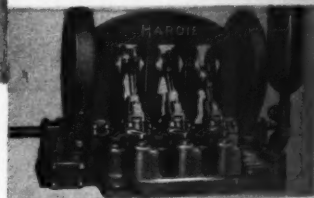
Hardie guns give quicker, better coverage. A trial proves it. Single and multiple nozzle types available.

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HARDIE

Dependable SPRAYERS

surfaces are not adequately aerated.

In light of preceding discussions, it is obvious that the ideal orchard soil should be one that would be (1) receptive of rainfall, (2) well-drained, (3) retentive of moisture, (4) well-aerated, and (5) adequately supplied with or at least responsive to plant nutrients. To meet these requirements the surface of soil must be kept open and not allowed to become compact; the subsoil should not consist of a heavy, impervious layer that restricts air and water movement as well as root penetration; and the texture should not be so coarse (sand) that plant nutrients are not held but leach readily, nor should it be so fine (clays) that fertilizers will not penetrate readily.

There are few soils that fulfill these requirements. Nevertheless, when orchards are placed on such soils they are usually highly productive. This is evidenced by the success of the orchards on the silty, loessial (wind blown) soils along the Missouri and Mississippi rivers. It is also proved by the high quality orchards on the Wooster silt loam, the soil type at the Ohio Agricultural Experiment Station. When one contrasts the success of these orchards with those grown upon the claypan soils, such as are found in the Missouri Ozarks as well as at other places throughout the Middle West, the difficulties encountered on soils of poor structure are immediately recognized.

Early experimental observations in the Missouri Ozarks showed that the trees were shallow-rooted; the feeding area was restricted, and the trees were subject to many physiological disturbances. More recent experiments in New York have emphasized the importance of subsoil aeration in the productive capacity of apple trees. Little can be done to remedy the deleterious effects of heavy subsoil layers. New orchards, however, should not be contemplated on such soils if long-life trees and continued production are to be expected.

As far as the condition of the surface soil is concerned, most soils, including silty ones, will puddle and compact in the surface in the absence of sods, mulches or organic matter of some source. Organic mulches are excellent means of maintaining an open structure in the surface. Good grass sods also maintain a fair state of tilth. In this regard, it is important to point out that sods are almost mandatory in orchards on rolling land, if erosion or soil washing is to be controlled.

Therefore, in conclusion, it should be re-emphasized that the nature of the orchard soil is a very important factor in the growth of trees. Temperature, moisture, air and nutrient problems are associated with the make-up of the soil and the system of soil management and fertility maintenance that is practiced.

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Important
STEPS TO
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CORRECT TIMING

*GRASSELLI Lead Arsenate

*NUREXFORM Lead Arsenate

Calcium Arsenate

Dry Lime Sulfur

Lime Sulfur Solution

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● A good spray program, at the right time, with DU PONT Spray Products will help you get higher yields and cleaner fruit.

Proper protection helps to grow a healthy tree with healthy leaves contributing to better fruit. Of course, the fruit itself must be protected against insects and diseases.

One of the three important steps in better crop protection is the complete line of DU PONT Insecticides and Fungicides.

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Stauffer Sulphurs are your best investment in fighting Apple Scab and Brown Rot on Peaches. Before you buy your sulphur compare the specifications of Stauffer Sulphurs with any other brands—on a quality-price basis Stauffer Sulphurs win every time.

Use either "Magnetic-70" Concentrated Sulphur Paste or "Magnetic Spray" Wettable Sulphur for Apple Scab. For Brown Rot on Peaches use "Crown" Brand Wettable Sulphur.

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"MAGNETIC-70" Concentrated Sulphur Paste

"MAGNETIC SPRAY" Wettable Sulphur

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**BUY SULPHUR
BY STAUFFER**

CHERRY COCKTAIL DEMONSTRATION

(Continued from page 10)

It is noteworthy that all of the store managers feel that the product would sell and that the customers continued to ask for the cocktail after the supply was exhausted.

In addition to obtaining the store managers' reactions to the product, the opinions of 97 persons in Geneva and Ithaca were obtained by mailing

which it could be served and used. The following are a few of these testimonials which came without asking.

"It is tart enough to be an excellent drink by itself and should make a grand base in combination with others."

"I like it for its flavor and color. It is excellent in gelatin and tapioca puddings."

"All my family like this product very much. I have given my friends and neigh-

TABLE 1—Quantity of Cherry Cocktail Sold

Store No.	Location	Type of Store	No. of Cans Sold	Length of Sale
511	Batavia	Super Market	480	Less than 3 weeks
321	Dansville	Regular	60	3 weeks
507	Geneva	Super Market	840	Less than 3 weeks
513	Ilion	Super Market	180	3 weeks
501	Ithaca	Super Market	301	3 weeks
404	LeRoy	Regular	73	3 weeks

out a questionnaire to 107 purchasers of Cherry Cocktail. A summary of the opinions given on the returned questionnaires is presented in Table 2.

The results of this survey indicate that 77 per cent of the purchasers of the juice were pleased with the product and had no criticism of the blend. Thirteen per cent thought the product was slightly weak, whereas four per cent would have been better pleased if it had been somewhat more

bors a sample and they all say it is fine and will buy it. Is it possible to get any more in Geneva?"

"Served to guests and asked for criticism. It seemed to be the general opinion that any change would not improve it."

"It makes a delicious and refreshing drink both for breakfast and before an entrée. It tastes like fresh fruit."

"I think the flavor is just right; it's a wonderful drink."

"Went over big both for appearance and taste in my household and also at Golden Circle Banquet."

"I have already purchased more of the cocktail. We found it to be a refreshingly different drink. Just a nice flavor for breakfast, and grand for a between meal snack for children. I think it should be popular."

"Perhaps I am prejudiced as I am particularly fond of juices, but I thought your Cherry Cocktail was an exceedingly fine drink, delicious and invigorating and the sugar content was just right for my taste."

"I believe it would sell well in both summer and winter." (This comment was made by a grocery store manager who purchased the cocktail.)

"A new taste, a new flavor. Grand for punches. As a breakfast drink it could be a little more tart."

"Cherry Cocktail is very good in a fruit sauce to be used over sponge cake or cottage pudding."

"Just right. I have two children, they liked it very much."

"Perfect! As well as being a fine beverage, it is excellent for sauces for salads, puddings, etc."

Many other comments were equally favorable.

In view of the extraordinary reception accorded this product, we believe that it has commercial possibilities. However, it should be pointed out that the fine flavor of the product and consequently the general approval it received, is due to the fact that it was a blend of Montmorency and English Morello juices made from sound, fully mature fruit. A cherry beverage made without English Morello juice is not likely to have the same appeal as it will be lacking in certain pleasing characters. Further, immature or unsound fruit also will detract from the quality of the product.

Since there is a real need for additional outlets for cherries, and since this product was so well received, it is evident that the cherry juice industry has important commercial possibilities.

TABLE 2—Summary of Opinions on Cherry Cocktail

From Geneva

Number of Replies—61

- Did you like the product?
 - Yes 53
 - Fairly Well 4
 - No Reply 2
 - No 2
- Was it too tart? 1
 - Was it too sweet? 2
 - Was it too bitter? 1
 - Was it too weak? 6
- Would you purchase regularly?
 - Yes 37
 - Occasionally 12
 - No Reply 5
 - No 7

From Ithaca

Number of Replies—36

- Did you like the product?
 - Yes 31
 - Fairly Well 3
 - No 2
- Was it too tart? 2
 - Was it too sweet? 2
 - Was it too bitter? 0
 - Was it too weak? 7
- Would you purchase regularly?
 - Yes 24
 - Occasionally 2
 - No Reply 2
 - No 8

dilute, and an equal number of persons felt that the cocktail was too sweet. Nevertheless, 96 per cent of the purchasers liked the product, and a large percentage of these were enthusiastic about it, 63 per cent indicating that they would like to purchase the product regularly. An additional 14 per cent stated that they would buy the cocktail occasionally.

No consideration of the results of this survey would be complete without reference to the large number of persons who, under the heading of "Comments," indicated their enthusiasm for the product and suggested ways in

FERTILIZER FACTS

(Continued from page 9)

factorily to all. The Dunsmore series will indicate a fair cross section of the nitrogen, phosphorus and potassium content in an average Virginia orchard soil.

According to a HCl (specific gravity 1.115) method there is present in soils of the Dunsmore series .06 per cent phosphoric acid and .545 potash. This would indicate an availability of 2100 pounds of phosphoric acid and 19,075 pounds of potash to the foot acre. If all of this material is available to apple trees, there would be enough phosphoric acid to take care of the needs of 40 apple trees capable of producing 20 bushels of apples annually per tree for 191 years and enough potash for 439 years. These soils also show about .09 per cent nitrogen to be available or 3150 pounds per foot acre. This would provide enough nitrogen for 40 such apple trees over some 78 years.

Analyses of the Cecil series do not show such high amounts of phosphoric acid and potash. These are as follows based on HCl test: for phosphoric acid .03 per cent and for potash .17. Nitrogen shows a content of .11 per cent. According to these percentages there should be available 3850 pounds of nitrogen, 1050 pounds of phosphoric acid and 6358 pounds of potash. The amount of nitrogen available should take care of the 40 apple trees mentioned for 98 years, the phosphoric acid for 96 years and the potash for 150 years.

Using the more rigid test for availability, namely, the fifth normal nitric solution, less phosphoric acid and potash would be available for apple trees. In the Dunsmore series there are shown to be present on this basis of analysis 53 parts per million or 185 pounds of phosphoric acid and 325 parts per million or 1116 pounds of potash per foot acre. The Cecil soil series shows 23 parts per million or 81 pounds of phosphoric acid and 295 parts per million or 1033 pounds of potash per foot acre.

The 40 apple trees according to these indications of availability in the Dunsmore series would be supplied with enough phosphoric acid for some 17 years and with potash for 25 years. In the Cecil series the phosphoric acid available would meet the needs of the 40 apple trees for eight years and potash for 24 years.

Accepting the more rigid test for availability, the two more common apple sections of Virginia show that on an average an acre has enough of the three essential elements to take care of 40 apple trees, each yielding a crop of 20 bushels annually, on the following basis: for nitrogen be-

(Continued on page 22)

"D2 REPLACES

20 horses

... OPERATING EXPENSE, 22c AN HOUR!"

MELVIN HULTGREN, WINTON, CAL.



MELVIN HULTGREN produces peaches, grapes and hay in Merced County, California. After 2 years of experience with his "Caterpillar" Diesel D2 Tractor—2100 hours by the hour meter—he reports:

"My former power was 12 head of horses. I figure that my Diesel D2 replaces 20 head of horses because it runs 20 to 22 hours daily instead of 8 to 10. The D2 does the work on my 180 acres, and still has time to do 600 hours of custom work a season.

"Operating expense on my D2, including fuel, oil and grease, totals only 22c an hour."

Fruit-growers commonly save 60% and more, on fuel expense alone, with the 3-4 plow, 5-speed Diesel D2—compared to the spark-ignition power replaced. And many a grower has a season's fuel bill that's less than the "keep" of one good draft horse!

Why not investigate the advantages this sturdy, tireless, sure-footed tractor offers you?

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Gentlemen: How can I find out, by mail, and without obligation, whether I should own a "Caterpillar" track-type Tractor?

Size of orchard _____ Power now used _____

Name _____ R. F. D. _____

Town _____ County _____ State _____

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This new Cesco E-Z "C" Face Protector will enable you to face lime, sulphur, oil and poisonous sprays, and SEE WHAT YOU ARE COVERING during the entire operation.

**Tear Off Renewable Visor To Remove Smudge
Get Greater Crop Coverage—Comfort—Security**

Note the Renewable Visor which consists of a clear, transparent ribbon. Easy to pull out and tear off when water-spotted or smudged. 30 feet of it! Just a few inches CLEAR VISION INSTANTLY. Provides thorough coverage of more trees in less time. Order from your seedsman or hardware dealer—or write direct, \$3 complete.

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Chicago, Illinois

FRUIT FERTILIZER FACTS

(Continued from page 21)

tween 75 to 98 years, for phosphoric acid between 10 to 17 years and for potash between 23 to 25 years.

How do these tests bear out in experimental observations and how are certain responses of apple trees to different fertilizer application involving these three essential elements to be reconciled on the basis of these soil tests for availability?

Let us go to the records of the five highest yielding Yorks, Staymans and Winesaps at the Virginia Agricultural Experiment Station to ascertain what bearing the initial soil fertility, the situation regarding soil moisture retention and the fertilizer applications may have had on the yield responses of each of these trees. Let us refer to Table I.

These trees selected from the fertilizer experimental plots of the Virginia station were set out in the spring of 1911 and were given their respective fertilizer treatments from 1912 to 1937 with the exceptions that are to be indicated. Applications were made to compare the effects of nitrogen alone and combinations of nitrogen with either or both phosphorus and potassium. The nitrogen in combination was used on the same basis as by itself. The initial basis per tree was 5.9 ounces of sodium nitrate with 8.3 ounces of blood meal for the nitrogen, 29.6 ounces of 16 per cent acid phosphate for the phosphorus and 5.9 ounces of potassium

sulphate for the potassium. By 1928 these were stepped up to 24 ounces of sodium nitrate with 36 ounces of blood meal, 82 ounces of 16 per cent acid phosphate and 24 ounces of potassium sulphate. From then on the basis per tree was five pounds of sodium nitrate, two pounds of 16 per cent acid phosphate and one pound of potassium sulphate.

The general site of the entire experimental orchard was the most uniform that could be secured in the general vicinity. Nevertheless, very significant differences prevail throughout. Some spots were far more favored than others in initial fertility and soil moisture retention. Ranked in their order of the more favorable situation to start with, the five York trees were as follows: First C*** (II-5-20) where no fertilizer was used until 1934 when a five-pound application of sodium nitrate was made and each year after that until 1937 inclusive; second N (I-2-14) where the nitrogenous material only was used; third NK (II-4-19) where sulphate of potash was used along with the nitrogenous materials; fourth NP (II-6-14) and fifth NP (I-3-19) where 16 per cent acid phosphate was used with the nitrogenous materials.

Although the check tree C (II-5-20) had the more favored situation to start with as compared to the other trees in this group of five, it

TABLE II
Average Annual Yield Picked Fruit 20th to 30th Year, Inclusive
Dean Price Orchard

Row	Bushels per tree:			All Varie- ties	Treatment
	Grimes	York	Slayman		
1	1.23	1.07	1.65	1.32	Calcium Cyanamide 5 lbs. Fall
2	2.43	1.39	1.27	1.65	Calcium Cyanamide 10 lbs. Fall
3	1.74	.89	1.14	1.25	Check*
4	2.79	1.74	2.28	2.27	Sulphate of Ammonia 5 lbs. Fall
5	1.91	1.32	1.25	1.49	Nitrate of Soda 6.5 lbs. Fall
6	1.36	1.19	1.38	1.31	Calcium Cyanamide 5 lbs. Spring
7	.89	1.18	.33	.80	Check
8	1.45	1.35	1.55	1.45	Calcium Cyanamide 10 lbs. Spring
9	1.80	1.23	.62	1.22	Calcium Cyanamide 15 lbs. Spring
10	.70	1.19	.30	.73	Check
11	1.09	1.59	1.41	1.37	Sulphate of Ammonia 5 lbs. Spring
12	1.19	.44	.39	.67	Check
13	5.31	2.91	1.75	3.32	Ammo-Phos. 13 lbs. Spring
14	3.66	3.07	2.71	3.15	Ammo-Phos. Pot. 17 1/2 lbs. Spring
15	1.19	1.39	.62	1.07	Check
16	3.75	2.75	4.00	3.50	Fall Application: Calcium Cyanamide 10 lbs. Acid Phos. (20%) 13 lbs., Sulphate of Potash 4.2 lbs.
17	4.13	2.07	2.69	2.96	Calcium Cyanamide 10 lbs. Sul. Potash 4.2 lbs.
18	4.44	2.63	2.44	3.17	Calcium Cyanamide 10 lbs. Acid Phos. (20%) 13 lbs.
19	1.82	.38	.57	.92	Calcium Cyanamide 10 lbs. Spring Application:
16	5.50	2.25	4.00	3.54	Same as 16 above
17	4.00	1.07	2.44	2.50	Same as 17 above
18	4.22	2.38	2.44	3.02	Same as 18 above
19	1.88	.38	.57	.94	Same as 19 above

*Check—Unfertilized.

was outyielded by those that were treated with nitrogen and potash. This check tree came third in yield after 1937. This is attributed to the N it received after 1934.

The trees receiving the combination fertilizers also outyielded the one that received only nitrogen even though they were in much more unfavorable situations regarding initial soil fertility.

Taking all these factors into consideration, it would appear that the more favorable responses developed in the trees receiving the combinations indicated. Adding 10,218, 9597, 9079 to make 28,894 and dividing by three to give 9631 pounds, the average for the yields of the combination fertilizer trees, there is, then, after subtracting the yield of the check tree 9071, a gain of 560 pounds or about 11 bushels of fruit in favor of the combination set.

With the total cost for the fertilizers used over the entire time at \$2.65, it is left up to anyone who wishes to figure any further whether or not the risk of the added expense for the fertilizer used was worth while. The difference between this combination fertilizer yield average and that of the tree receiving nitrogen alone was 688 pounds or about 13 bushels gain for the combination set at a risk of \$1.15.

In the Stayman group the order of best initial situation was as follows: First N (I-2-3) and second N (II-2-3) where only nitrogenous material was used; third NK (II-7-2) where potassium sulphate was added to the nitrogenous materials; fourth NP (I-3-7) where 16 per cent acid phosphate was added to nitrogenous materials; fifth NP (I-8-9) where both 16 per cent acid phosphate and potassium sulphate were added to the nitrogenous materials.

Compared to the two trees receiving only the nitrogenous materials, all of the other trees were decidedly handicapped to start with, yet the NK and NP gave the higher yields.

In the Stayman group of the five highest yielding trees the rank in order of the more favorable soil situation to start with is as follows: First N (I-2-3) and second N (II-2-3) trees treated only with nitrogen; third NK (II-7-2) where sulphate of potash was added to the nitrogenous materials; fourth NP (I-3-1) where acid phosphate was added to the nitrogenous fertilizers; fifth NPK (I-8-9) where both acid phosphate and sulphate of potash were applied along with the nitrogenous sources.

The trees in this group receiving only the nitrogenous fertilizers were by far in the better soil situations to start with, yet they were outyielded by those receiving NK and NP combinations. The tree receiving NPK is in a badly galled and eroded slope

(Continued on page 25)



MAKE MORE PROFIT FROM FRUIT

ANY profitable orchard program must provide a good supply and proper balance of all plant-food elements for the trees and cover crops. Nitrogen and potash are used by the trees in about equal amounts. Potash gives vigor to the trees, increases resistance to diseases, and improves the keeping quality of the fruit. It also is necessary for a heavy growth of cover crops.

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Write us for further information and free literature on the profitable fertilization of crops.

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ON YOUR FEET BECAUSE THEY'RE
LIGHTER, MORE SUPPLE—YET
LONGER-WEARING BECAUSE THEY'RE

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UNITED STATES RUBBER COMPANY

AMERICAN FRUIT GROWER

PAGE 23

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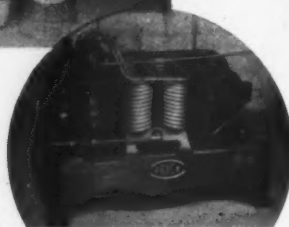
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Because it keeps fruits, vegetables, poultry and dairy products in prime condition until sold. Plant quickly pays for itself, as proved by scores of installations on farms like yours. Get full details now: ask for Bulletin 146.

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Write for catalog and pamphlets giving full information about these superior products.

DI-CHLOR-MULSION

Kills peach tree-borers.

THE J. W. WOOLFOLK COMPANY, Fort Valley, Ga.



PAGE 24



AMERICAN FRUIT GROWER

APS

(Continued from page 4)

raspberries make unfavorable growth despite good care. Latham plants were mulched with rye straw at the rate of about eight tons per acre. In addition, nitrate of soda was applied in April and July to the mulched and control cultivated rows.

The conditions were so favorable that at no time did the clean-cultivated plants suffer from moisture deficiency. At a depth of two inches, soil temperatures were higher in summer and lower in winter under tillage than under mulch. The total cane growth was much greater in the mulched row than in the cultivated, and the total number of sucker plants produced during the three years was about 16 times as great in the mulched area. Yields in 1938 were five times as large in the mulched as in the cultivated block, but no significant differences were established in berry size. Determinations of the potash of leaves collected in the fall of 1938 from mulched and cultivated plants showed 2.39 and 0.86 per cent, respectively, a very striking contrast.

H. L. Lundy
SECRETARY

KING STRAWBERRY

(Continued from page 15)

quarts. One day the growers brought berries to market in quart cups, and were told to bring them in pints in future. The next day and continuously since, pint containers have been practically the only ones used.

Pony refrigerators, insulated wooden boxes holding 32, 64 or 80 quarts, were formerly used in shipping a good percentage of the crop, particularly of early berries. They could be sent by express to small markets which couldn't absorb a carload. The pony has practically gone off the market, however, with wider use of refrigerated trucks.

Fresh berries from Plant City are sent to markets throughout the United States and to some points in Canada. Overripe and slightly off-grade berries are sold to two cold-pack plants, where they are stemmed, washed, sorted and have blemishes removed before being packed into five-gallon tins or 50-gallon barrels and placed in cold storage. They are used largely in the ice cream trade, but to some extent in the frozen fruit and preserving trade.

Coming
**JUNE DIRECTORY
ISSUE**

APRIL 1939

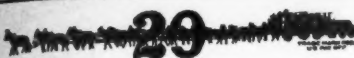
KILL RATS WITHOUT POISON

YOUR
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APRIL, 1940

FERTILIZER FACTS

(Continued from page 23)

and at a very decided disadvantage. Compared with trees in far better situations receiving no fertilizers, it outyielded the far more favored highest yield check tree by over 2100 pounds or over some 40 bushels from 1918 to 1939, inclusive. The gain of this NPK tree over similarly situated trees receiving nitrogen only was approximately 30 bushels.

In the Winesap group the order in rank for the initial situation was first N (I-2-2) and second N (I-2-1) receiving nitrogenous material only; third NK (I-7-1) receiving potassium sulphate and nitrogenous materials; fourth NP (I-6-7) receiving 16 per cent acid phosphate and nitrogen; and fifth NPK (III-7-8) receiving both 16 per cent acid phosphate and potassium sulphate along with the nitrogenous materials. The NPK tree was in heavy sod up to 1930 and generally greatly handicapped compared to the other top-notch yielders.

The yield of the highest Winesap check tree for this entire period was only 2255 pounds or some 45 bushels. The lowest yielding Winesap in this five high yielding group was 8164, a gain of some 6909 pounds or about 138 bushels over the highest check.

It would appear that most of our Virginia orchard soils contain nitrogenous, phosphatic and potassic material in adequate amounts to take care of apple trees through their entire commercial life. In some instances fruit may be grown more profitably with no fertilization whatever or at most only with occasional nitrogenous applications. The point that may be overlooked is that in most Virginia apple orchards these materials become increasingly inaccessible as the root systems of the apple trees develop and displace soil in a limited space. Apple trees reaching a physiological limit may draw upon their reserves to such a degree that they are liable to become susceptible to various stages of decline.

At any rate the evidence produced from the results of experiments conducted over a three-year period in a closely planted orchard from its twentieth to twenty-third year indicate in a striking manner the direct responses of apple trees to fertilizers under such conditions. See Table II. The soil in this orchard, which is described as a Clarksville gravelly silt loam, is very cherty and shows a pH reading of about six. The subsoil, composed mostly of a tight, stiff clay, is seldom penetrated to a depth of more than two feet. At the time of the experiment the trees were low in vigor as well as yields and small for their age as compared to other trees planted in the same year in this general vicinity. These trees are planted 25 feet apart which no doubt

(Continued on page 27)

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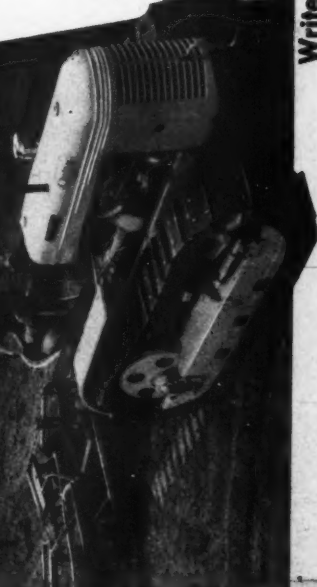
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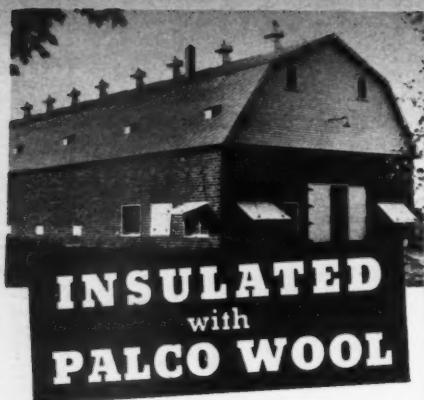
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NUT TREE INSECTS AND THEIR CONTROL

AT the Rockport, Ind., meeting of the Northern Nut Growers Association, S. C. Chandler, field entomologist of the Illinois Natural History Survey, discussed several of the more important northern nut tree insects, and suggested control measures.

The pecan nut case-bearer is a serious pest in southern Illinois pecan orchards and probably in the wild groves. In one orchard at least three-quarters of the crop was destroyed. The larva is an olive green worm with a brown head and about one-half inch in length. The larva overwinters in small cases attached to the shoots close to the buds. These overwintering worms tunnel in the tender shoots as twig borers. The first brood of the season tunnel in the small developing nuts which soon fall. Two or three other broods may occur. Good control of this insect has been obtained by spraying twice with nicotine sulphate 1 to 1000 with summer oil three-fourths per cent. The first spray is applied when the buds are first pushing out in the spring; the second 10 to 12 days later.

The fall webworm is also controlled by spraying or dusting the trees with an arsenical before any serious injury has taken place. There are two broods of this insect, but the second brood which comes in midsummer is the one that does most of the damage.

Professor Chandler suggested that the taller nut trees would need a high-powered sprayer with a tower. A greater height could be attained by using only one spray gun and throwing a more or less solid stream.

The twig girdler and twig pruner cut off the twigs of several varieties of nut trees. The twig girdler lays its eggs along the twig at the buds and then partially girdles the twig, so that it is easily broken off by the wind. The twig pruner larva bores from within and cuts the branch nearly off, the wind finishing the job. Control of both pests is brought about by picking up and burning the fallen twigs in the fall.

The flat-headed borer attacks the trunks of young budded nut trees. The insect prefers weakened trees and a sunny site. The remedy is shading the trunks of young trees by low heading or by wrapping them with ordinary wrapping paper. Shading may also be done with a V-shaped trough on the south side of the tree.—GEORGE L. SLATE, Sec'y, Northern Nut Growers Assn., Geneva, N.Y.

• ANDREW T. GOSSMAN •

The passing of Andrew T. Gossman, 67, is keenly felt in pomological circles. He was president and manager of the Columbia and Okanogan Nursery Company, Wenatchee, Wash., but probably more widely known for the development and distribution on a national scale of a number of fruit varieties, including the Richared apple, the Shotwell Delicious, the BlackJon, the Red-elberta peach and the Riland apricot.

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FERTILIZER FACTS

(Continued from page 25)

in a large measure checked growth.

The treatments were as listed in Table II.

Rows 13 to 19, inclusive, except the check rows, were all on the same nitrogen basis. It should be mentioned that the purpose of using the larger amounts of fertilizers was to study the different effects of such quantities, as some are very toxic and others are decidedly stimulative. In fairness to all materials mentioned in these experiments, it should be stated that the rates used in some cases are much higher than generally recommended. Manufacturers of calcium cyanamide caution not to use more than 300 pounds per acre or much over five pounds per tree of their material in most average soils, and in sandy or gravelly soils it is advised not to use more than 100 pounds per acre at one time. It is, however, interesting to note how much even such heavy applications as 10 pounds of calcium cyanamide per tree were improved when used with potash and acid phosphate.

Generally the cover crop response is observed as the more direct one to the application of complete fertilizers. The fruit trees in their earlier history do not show direct responses except from some of the nitrogenous applications. Just the same, as trees become older, where they are more crowded and in the less fertile soil situations, the chances of showing up the more direct responses to complete fertilization are more likely. Excellent examples of such responses are brought out in the Dean Price orchard.

In every instance where either or both phosphorus and potash were added to a nitrogenous carrier, very pronounced gains in growth and yields were obtained. The buds of the trees receiving a complete fertilizer combination were almost four times heavier than those receiving only a nitrogenous application. These responses developed in the first season of application, thus showing how quickly apple trees may respond to a complete fertilizer.

Conclusions

Apple trees are more likely to show more direct and marked growth and yield responses to complete fertilizers as they become older and root-crowded. Outstanding results were shown in the Price orchard with trees at a more advanced stage of root crowding as soon as one season after application. Although responses were not observable until sometime after the fifteenth year in the more favored trees in the station orchard, they nevertheless became manifest and

(Continued on page 28)

AMERICAN FRUIT GROWER

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January 16, 1936

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The fruit pickers do not tire so they work as they do with baskets or buckets, and being able to pick with both hands they can do much more and better work under all circumstances than when using anything else for picking and sorting.

Yours very truly,

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no cutting or bruising of fruit

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FROSTPROOF CABBAGE PLANTS. LEADING VARIETIES, immediate shipment 500-60c, 1000-95c, 5000-\$4.50, 10,000-\$8.00. Will ship C.O.D. Free catalog tomato and other plants. We are near you—quick delivery, fresh plants, lower transportation. Satisfactory plants or money refunded. OMEGA FARMS, Cairo, Illinois.

GROW VEGETABLES TWO WEEKS EARLIER WITH Carlisle's field grown plants. Cabbage plants \$1.00; tomatoes \$1.50; onions 75c. Write for prices on broccoli, Brussels sprout and cauliflower. Catalog sent. CARLISLE PLANT FARMS, Valdosta, Georgia.

WHITE, YELLOW BERMUDA ONIONS: 6,000, \$1.75. Charleston, Dutch, Copenhagen cabbage: 3,000, \$2.50. Blakemore, Dunlap, Dorsett, Aroma strawberries: \$2.50 thousand. SHELBY PLANT FARMS, Memphis, Tennessee.

POULTRY

NEW ENGLAND POULTRYMAN AND NORTHEASTERN Breeder Special offer during the chick season. Six months for 25c, one year for 50c, usually \$1.00 per year. Interesting news and views. Valuable editorial material on skillful breeding, profitable production, and efficient marketing. Carefully censored advertising. Nationally read by poultry leaders. Subscribe now! NEW ENGLAND POULTRYMAN, 4F Park Street, Boston, Massachusetts.

ROADSIDE FRUIT MARKETS

HOUSE'S CHERRY CIDER AND CHERRY MIX HAVE made some roadside stands more money past 15 years than any other product. Can be shipped in concentrated form. Write for particulars and territory. HOUSE'S CHERRY CIDER COMPANY, Riverside Fruit Farm, Saugatuck, Michigan.

SILK HOSIERY

"EVERWEAR" HOSIERY—XTRAFINE—FIVE PAIRS \$1.00 (trial 25c). (Three full-fashioned pairs \$1.25.) DIREX, AF211W, Broad, Savannah, Georgia.

AMERICAN FRUIT GROWER

FERTILIZER FACTS

(Continued from page 27)

showed with significance from then on.

In general, apple orchards of Virginia and in many sections adjoining are fairly well represented in most of their ultimate nutrient needs by the results secured either from the station or the Price orchard. Even though a wide chemical variation may exist, there are two physical factors that put most of the apple orchards on something of the same level. With the exception of some mountain cove orchards and perhaps some with deeper and lighter textured soils for root descent, the average orchards of Virginia have only between two to three feet of soil that can be penetrated by the roots of the apple trees. Coupled with this are the prevailing planting distances of the apple trees which over the State are of negligible variation.

Thus, on the whole, everything else being equal, the same varieties of apple trees over the State will all decrease in their rate of growth and yield when their root systems fill up their allotted soil areas to the degree of root crowding. From then on all of them will be on very much the same level of fertilizer needs. In 35-foot planting distances, all trees of the same variety after they are 20 to 25 years of age will come to much the same level of growth and yield rate decrease. Many of our Virginia orchards are just about at this stage of root-crowding at present.

• VICTOR C. FOLLENIUS •

An exceptionally useful citizen was taken from us recently when Victor C. Follenius succumbed to pneumonia at the age of 49 years. At the time of his death he was head of the canned fruit sales department of the oldest co-operative in the Pacific Northwest, the Apple Growers Association of Hood River, Ore., which handles both fresh and processed fruits.

During the time Follenius visited markets throughout the country seeking to expand demand for the association's Diamond brand apples and pears, he was also representative of Pacific Northwest Fruits, Inc.

STRAWBERRY PLANTS

THE "CRESCO" STRAWBERRY, SUPERIOR DUNLAP type, ask for circular. 500 plants \$6.50; 1000, \$9.95. W. A. BENTS NURSERIES, Cresco, Iowa.

DUNLAP AND BELLMAR STRAWBERRY PLANTS \$2.75-1000. All best sorts, better prices, larger lots. CHATTANOOGA NURSERIES, Chattanooga, Tennessee.

STRAWBERRY PLANTS—FOURTEEN VARIETIES, \$2.50 per thousand up. Write for price list. ANNA STRAWBERRY NURSERY, Anna, Illinois.

YELLOW FREE BLAKEMORE STRAWBERRY plants. 1000—\$3.00. WHITFORD NURSERY, Farina, Illinois.

TRACTORS—MACHINERY

SAVE UP TO 75% ON TRACTOR PARTS. ALL MAKES. Send for big 1940 free catalog. IRVING'S TRACTOR LUG COMPANY, Galesburg, Illinois.

WRITE FOR FREE LARGE 1940 CATALOG OF USED and new tractor parts. Satisfaction guaranteed. CENTRAL TRACTOR WRECKING COMPANY, Boone, Iowa.

TREE BANDS

EARLY BIRD TREE BANDS CHEMICALLY TREATED. Low in price, high in quality. Saves you work and money. Helps you produce better apples. Satisfaction guaranteed. Send orders early. EDWIN H. HOUSE, Saugatuck, Michigan.

COD-O-CIDE TREE BANDS, CHEMICALLY TREATED. Original commercial band. Standard for 15 years. State number of 250-foot rolls required when writing for quotation. TYSON ORCHARD SERVICE, Flora Dale, Pennsylvania.

CHEMICALLY TREATED TREE BANDS. M. A. KOELLER, Barry, Illinois.

APRIL 1940

NEW

- SPRAYING ATTACHMENT
- FRUIT CRADLE

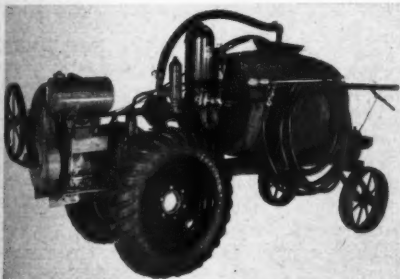
By HANDY ANDY

Not long ago, California raisin growers charged up to overhead about four tons of raisin seed a year. That was before someone discovered that the seed contained about 15 per cent edible oil by weight. Now the seed is washed and alcohol and brandy are recovered from the wash water. Then the seed is cured, ground, cooked and pressed, just as if it were cottonseed. The remaining cake after the oil has been extracted is used for feed, fuel or fertilizer. The oil is esteemed by epicures for salads and cooking. Growers use it to keep seeded raisins from sticking together and to give them a gloss.

SPRAYING ATTACHMENT •

A complete spraying outfit for use on any of several Utilitor tractor models and operated from the tractor engine has recently been placed on the market by the Utilitor Company and will be of interest to the smaller professional grower.

The S-150 Attachment, as the unit is called, has for standard equipment a 50-gallon tank with mechanical agitator, a self-oiling spray pump specially designed for high pressure spraying, pressure gage, 50 feet of high pressure hose, brass pipe extension with spray nozzle, pressure



regulating valve and double lever cut-off discharge.

Mounted on an auxiliary two-wheel frame, the unit is bolted to the chassis of the tractor. Flexible action of the hookup permits easy handling of the outfit on rough ground. The attachment is equipped with two outlet valves for two spray guns, or row-crop spray boom and spray gun operation.

The spray outfit can be easily detached and tractor handle bars and implements substituted and the Utilitor is ready for plowing or cultivating.

Have you ever stopped to think what causes eyestrain while you're pruning? The pupil of your eye closes down when you look to the sky because of the intense light. When you look down on the dark ground the pupil of your eye opens to let in more light. Doing this two or three thousand times a day means that you suffer eyestrain and nervousness.

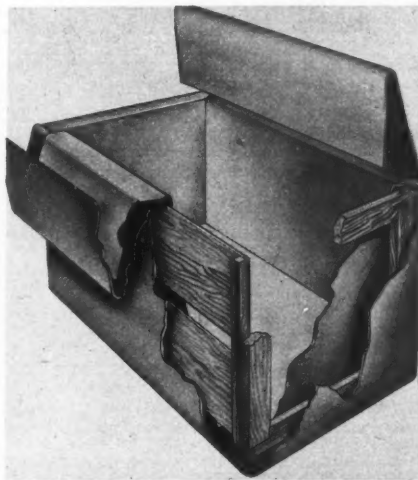
Some types of sunglasses cut down the ratio of light to dark, but eyestrain is not lessened. Optical filter glass filters out the infrared rays of the sun, and tight

fitting goggles equipped with such lens will not only reduce eyestrain but will protect the eyes from bark chips, bud scales, etc., during the pruning operation.

FRUIT CRADLE •

Wood containers for fruit, although strong, are hard. When not properly lined, their contents may suffer bruises and flat spots.

It's this damaged fruit that concerned W. V. Roberts of the California Container Corporation, so he developed a standard size container that cradles the fruit.



The box has a wood superstructure that provides rigidity and a corrugated fiber exterior that provides cushioning plus flexibility. Thus when stacked each box literally is suspended independent of the one on top or below, like offices in a skyscraper.

While it embodies the features of the bulge pack, the box divides the bulge in two and transfers it to the sides. Thus the fruit is held tightly and yet not tight enough to cause bruise damage.

The arrangement of closing is unique



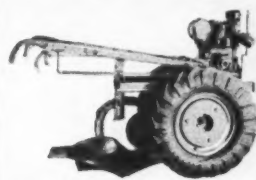
in that the top is nailed down to the wood supports by the use of cleats and the "Fruit Cradle" may be opened for inspection and reclosed without the use of special tools or paper tape.

The container won an award for the Rainier Fruit Company, Yakima, Wash., in the recent All-America Packaging Competition.

AMERICAN FRUIT GROWER

BREADY ALL-PURPOSE TRACTOR

30% More Traction With Our Patented Front Hitch



As the load increases so does the traction. A two wheel tractor that will work along with a good team of horses. Powered with a 4.7 H.P. Briggs and Stratton motor.

The Bready develops its own traction and is capable of plowing a furrow 14" wide and 8" deep under any reasonably normal condition, and will plow 2 to 3 acres per day.

Equipment consists of all tools for general farming such as plowing, fitting, cultivation, planting, mowing, belt work, etc. Ideal for fruit growers, poultry men, nurseries, florists, small farms and gardeners. Backed by 20 years of Bready engineering.

Write for literature explaining the many advantages of the patented front hitch.

BREADY TRACTOR AND IMPLEMENT CO.
201 Aurora Rd. Selen, Ohio

POINTCUT PRUNER

Power, speed and clean cutting make this a fine orchard tool. Cuts up to 1 1/4" green wood. Fast cutting on sprout and sucker growth at the point. Both edges cut without stripping bark or crushing fibers. A precision tool made to give long service.



PORTER PRUNERS



SEND for catalog. Shows full line. Special pruners for orchards — peach, citrus, pecan, etc. Tells you why Porter Pruners cut faster, cleaner—why they stand up under hard service.

H. K. PORTER, Inc. Everett, Mass.

HAMILTON

"Spray Guns that pay"

To fertilize and not spray efficiently is poor business

See the New Style Hamilton Guns, with Controlled Streamline

W. L. HAMILTON & CO.
BANGOR, MICHIGAN

Six Models A GUN FOR EVERY PURPOSE
Send For FREE CATALOG

Standard Garden Tractors

Powerful 1 and 2 Cylinder Tractors for Small Farms, Gardeners, Florists, Nurseries, Fruit and Poultrymen.
FOUR MODELS
Ample Power for Field, Haying and Truck Crop Tools, Run Pumps, Saws and Belt Machines.

Steel or Rubber Tires
High Wheels—Enclosed Gears
LOW PRICES
Write for Easy Terms Plan and Free Catalog
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GRAFTWAX—TREE HEALANT Heals pruned stubs, Arrasts—cures tree diseases, blights, wounds. Water proof, adhesive. Excess in grafting. Hastens union of stock and scion. SMEARED ON COLD. Scions dipped in melted Graftwax keep indefinitely, prolonging grafting season. Curative tree cavity filler. GRAFTWAX SEALS AND HEALS. 1 lb. 50c. 2 to 6 lbs. 50c lb. 12 lbs. \$5.00 Postpaid. Free Sample.
CLARION DEVELOPMENT COMPANY, INC., Dept. A, Clarion, Pa.

ACME GRAFTING COMPOUND
Endorsed by Michigan State College. Moderately priced and applied cold with a brush. Used also as a protective coating for injury. Send for price list. Dealers wanted.
M. H. Hunt & Son, 510 N. Cedar St., Lansing, Mich.

PAGE 29

SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

SPACING STRAWBERRY PLANTS FOR PROFIT

"DURING the past few years more people have become interested in spacing strawberry plants than ever before," writes Henry A. Congdon, Washington County, Rhode Island.

"Extensive experiments by U.S.D.A. and state experiment station workers as well as by strawberry growers have proved conclusively that plant spacing promotes the production of a large crop of the highest grade berries, and, conversely, that equal results cannot be expected without that high development of the individual plant which results from a well cared for, properly spaced bed.

Acknowledging that the results of these experiments prove conclusively the value of plant spacing, the grower is still confronted with the problem of caring for a spaced bed at the lowest possible cost.

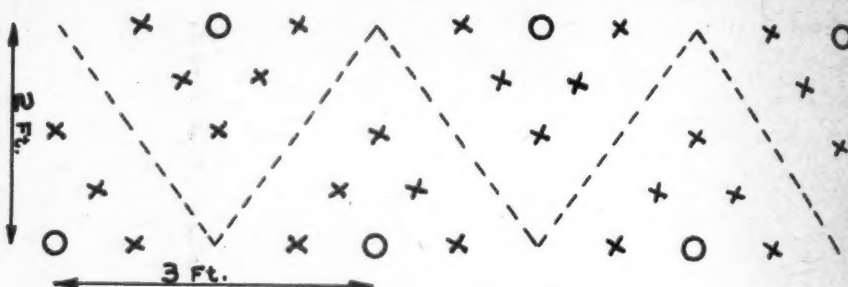
"I became interested in the practice of plant spacing about 25 years ago after reading an article on the subject by Frank E. Beatty. The two systems which he recommended were the 'single hedge row system' and the 'double hedge row system'. I tried the double hedge row system which provides for the layering of six new plants around each original or mother plant. These plants were so layered that they formed three single rows of plants in rows quite close together, with plants about eight inches apart in the row.

"The varieties which I planted were Pearl and Chesapeake. The Pearl formed much larger crowns than the Chesapeake and the crop the following year was much larger, but both varieties responded to this culture with finer crops.

"With varieties which produce many runners I have found that the control of these surplus runners after the new plants are established is often the most difficult and expensive part of raising a spaced strawberry bed.

"This was a major problem 25 years ago. It is today. My own experience has convinced me that this problem can best be solved by adopting some system of spacing which provides for a plant pattern from which the surplus runners may be most easily removed.

"For several years I have trained some



O Represents mother plants X Runner plants
Cut surplus runners along dotted lines

of my plants in a modified 'single hedge row system' by setting the plants in parallel rows 18 inches apart, then spacing in straight lines along these rows and leaving a space of 30 inches between the

This is a page where growers get together for an exchange of experiences and ideas. Both the beginner and veteran will find here many valuable suggestions for better and more profitable fruit growing. In return for helps you receive from this page, pass on your new ideas, methods or procedures. Just jot them down and mail to ROUND TABLE EDITOR, AMERICAN FRUIT GROWER. One dollar will be paid for each item published.

second of these rows and the next row, as in diagram at bottom of this page.

"This system provides for a comparatively limited number of plants per acre and is best adapted to those varieties which develop large, individual crowns.

"Last year I tried a system of spacing

which I had not seen described before and which I am convinced requires the least labor of any system I have tried. It also can be adapted to all varieties.

"This spacing system might be called the 'Family Group System' because each group of new runner plants which clusters around the mother plant is more widely and definitely separated from the next family group than in any other spacing system I know.

"This arrangement of plants reduces the cost of care because it reduces the labor of runner control to a minimum and reduces the danger of losing control of the spaced bed in a tangle of runners. On the other hand, it permits layering of as large a number of plants per acre as would be required for a maximum yield.

"In this spacing system the plants are set in rows two feet apart and about three feet apart in the row, requiring the same number of plants per acre as if they were set in rows four feet apart with plants 18 inches apart in the row. Diagram at top illustrates the Family Group System.

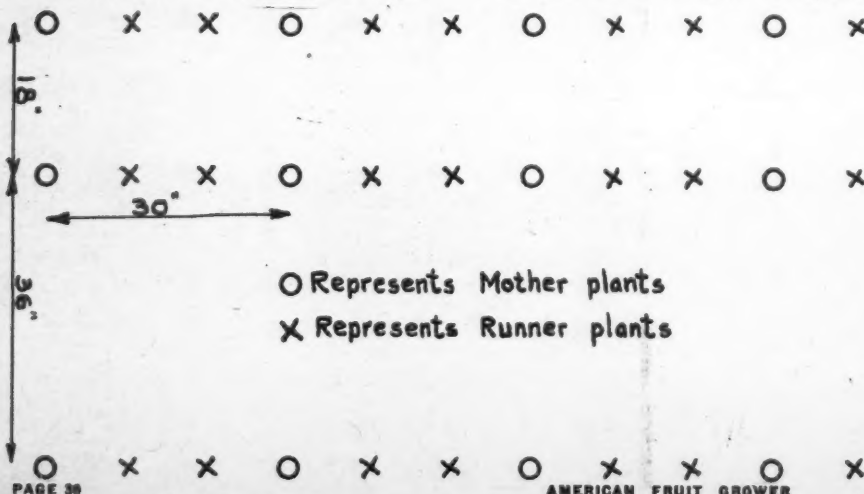
"By setting the plants three feet apart in the row instead of 18 inches and staggering the plants as shown in diagram, and by cutting the surplus runners along dotted lines as designated, the cost of removing surplus runners is less than in any other system I have tried.

"It is a system well adapted to all varieties whether they have long or short runners. With plants having long runners it is easy to space in an approximately triangular pattern as shown and, if the runners are short, the plant pattern will be more semi-circular in form."

USES STIFF BRUSH TO REMOVE SCALY BARK

BY using a stiff brush instead of a scraper, W. S. Knutson, Columbia County, Wisconsin, believes he has a better, safer method of ridding young trees of hideaways for the larvae of codling moth, so he passes on the results of his own ingenuity for the benefit of other growers, as follows:

"I use a stiff brush to remove scales of bark from the trunks and crotches of young trees. This prevents the larvae of codling moth and other orchard pests from harboring in such places. The brushing also gives the trees a neat appearance, and there is no danger of injury to the bark, as may be the case where a scraper is used on young trees."



Be Thrifty!



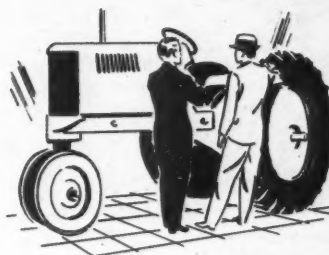
SEE HOW YOUR GOODRICH DEALER CAN SAVE YOU MONEY



YOUR LOCAL GOODRICH DEALER is not only a tire specialist—he knows local farming conditions and tractor problems. He can help you select the size and type tractor and implement tires that will give you the best service and the greatest savings.



LOW PRICES! Current prices on Hi-Cleat Special Silvertowns save you more than ever. The tires which save more than they cost now pay for themselves quicker than ever before! Savings on fuel alone often run as high as 33%.



BUYING A NEW TRACTOR? If you want your new tractor to develop all the power that's packed into that motor, order it delivered on Goodrich Silvertowns. A 1940 model tractor on Silvertowns is the answer to "How to do less work and make more money!"



SOLID AS GIBRALTAR! The cleats on the new Silvertown are wedge-shaped for greater bite—reinforced at the base so that they cannot loosen—guaranteed not to pull off! (Note: illustration is three-quarter size cross-section of cleat on typical tire.)



DOUBLE—NOT SINGLE! Cleats on the Silvertown tractor tire are arranged in pairs with an open-center design which bites into the ground, provides sure-footed traction. The tread is flexible in the center, has no mud-catching pockets. It cleans itself as it travels.



SUN-RESISTING RUBBER. Goodrich developed Sun-Resisting Rubber to save you money. This special compound used in all Farm Service Silvertowns protects against the deteriorating action of sun, weather, and barnyard acids.



PLOWING MADE EASY with this new Goodrich Tailwheel Tire. Your plow, equipped with this specially designed Tailwheel Tire, will work to a more uniform depth—make better corners—be easier to move from job to job. Operates best with Goodrich Implement Tires on land and furrow wheels.



HOW'S YOUR TRUCK? Thrifty farmers by the thousand are saving money with Goodrich Tires on their farm trucks. The new Triple Protected Silvertown is a cool-running truck tire—protected against failures caused by heavy loads and high speeds. It's the longest mileage tire Goodrich has ever built.



SPECIAL OFFER TO ALL MOTORISTS. Your Goodrich dealer can get you this miniature license plate reproduction with your own number and state color combination for only 10c. If you do not know the name of your dealer, write us for his name and address—Dept. FS-193, The B. F. Goodrich Co., Akron, Ohio.

Goodrich Silvertowns

CHANGE OVER YOUR PRESENT TRACTOR TO SILVERTOWNS OR GET THEM ON A NEW TRACTOR EITHER WAY YOU SAVE MONEY

SOLD

ON SIGHT *(Thanks to "Mike" Sulfur)*



Apples weren't on this particular shopper's list. But the top size, perfect finish and gorgeous coloring of the apples this grocer displayed "sold" her on buying a peck.

And here's how progressive orchardists grow this type of grade-A fruit—they spray with "MIKE" Sulfur.

"MIKE" Sulfur is non-caustic—more than 95% active sulfur—it controls scab infestation without burning foliage and allows green healthy leaves to develop—foliage necessary to produce top grade apples.

15 times finer than ordinary 325 mesh—"MIKE" Sulfur gives more thorough coverage. The microscopic particles stick to fruit and foliage better, resist the washing effect of rain longer. "MIKE" Sulfur goes into suspension immediately. It remains in suspension longer, stays free-flowing indefinitely and does not deteriorate with age. "MIKE" Sulfur gives longer-lasting protection, is more economical to use.

THE DOW CHEMICAL COMPANY • Midland, Michigan
Branch Sales Offices: 30 Rockefeller Plaza, New York City; Second and Madison Streets, St. Louis; Field Building, Chicago.

AND HERE'S ONE REASON WHY

In the post-bloom season "MIKE" Sulfur protected this apple without burning the foliage—gave leaves a chance to develop food to nourish a luscious, delicious apple.

Use Dowspray* Dormant to protect your fruit against rosy apple aphid, early green aphid, San José scale, scurfy scale, bud moth and European red mite.

*Trade Mark Reg. U.S. Pat. Off.

There is a

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FOR EVERY PURPOSE